QUARTERLY #7

VOLUME II

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IV. BIOLOGY

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QUARTERLY REPORT #7
FIELD DATA
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A. TERRESTRIAL VERTEBRATES

UTAH STATE DIVISION

of

WILDLIFE RESOURCES

BAND-TAILED PIGEON REPORT

Volume U-5

For the period June, 1975 through May, 1976

Prepared by

DARRELL H. NISH

Upland Game Supervisor

A. GENERAL

Utah's segment of the Four Corners Cooperative Band-tailed Pigeon Investigation was concluded in 1972. Ongoing activities in 1975 included trapping and banding and the hunting season. The season was held in Grand, San Juan, Iron, Kane and Washington counties from September 1-30 with a daily bag limit of 5 pigeons and a possession limit of 10. Free permits were required of all hunters.

B. HARVEST

Hunter participation decreased from 1974. Only 96 sportsmen obtained permits of which 54 reported hunting pigeons. This compares to 106 permittees and 63 hunters afield in 1974.

During 1975, 116 pigeons were bagged compared to 81 in 1974. The average hunter afield bagged 1.0 pigeons per day or 2.2 for the season.

C. POPULATION TREND

Pigeon density in 1975 was apparently slightly higher than in 1974.

D. BANDING

A total of 285 pigeons was banded in 1975 at two sites; 162 southwest of Cedar City and 123 at Monticello. An additional 118 were recaptured.

H. HUNTING SEASON RECOMMENDATIONS

It is recommended that the 1976 season be concurrent with the dove season from September 1-30 with daily bag and possession limits of 5 and 10 respectively.

UTAH STATE DIVISION

of

WILDLIFE RESOURCES

MOURNING DOVE REPORT

Volume U-15

For the period June, 1975 through May, 1976

Prepared by

DARRELL H. NISH

Upland Game Supervisor

A. GENERAL

The mourning dove call-count index shown in the annual dove status report for 1975 was 32.8 percent lower than 1974. A comparison of the average doves heard per route for all routes in the State for 1975 showed a 37 percent decrease from 1974 and a 20 percent decrease from the previous 10-year average.

Hunter success in 1975 (doves bagged per hunter-day) was 18 percent higher than 1974 and still 15 percent below the 1951-74 average. The bag per hunter for the season was 11.2 doves; 25 percent above 1974 and 22 percent above average. The total dove harvest was by far the highest on record (420,308). The marked increase in hunter success was not consistent with the substantially decreased breeding density index.

B. HARVEST

The 1975 mourning dove season extended from September 1-30 Statewide with daily bag and possession limits of 10 and 20 doves respectively.

During 1975, 37,378 hunters spent 131,312 days afield and bagged 420,308 doves, an average of 11.2 doves per hunter and 3.2 doves per hunter-day afield (Table 4). August weather was characterized by slightly below normal temperature and precipitation. Precipitation was quite general, but relatively light, over the State during the period from the 11th through the 22nd. Weather conditions just prior to and during the first week of the season were generally warm and dry.

Field bag checks of 1,966 hunters indicated that 124 doves were bagged per 100 hours effort, 53 percent greater than in 1974. The doves per hunter-day index from bag checks was 4.8, a 37 percent increase over 1974.

Results of the questionnaire survey showed an 18 percent increase in hunter success (doves per hunter-day) from 1974 to 1975.

Table 1 is a comparison of hunter success indexes derived from field bag checks and questionnaires from 1969 through 1975.

Age ratios of 3,104 dove wings collected in the Northern Region showed 54.1 percent immatures or 118 immatures per 100 adults (Table 2).

Of immature doves aged, 11.1 percent hatched August 3, 1975, or later and 67.7 percent on or after July 25, 1975 (Table 3).

TABLE 1. A comparison of mourning dove hunter success as determined by field bag checks and harvest questionnaire 1969-75.

Method	Year							Percent Change					
	1969	1970	1971	1972	1973	1974	1975	69-70	70-71	71-72	72-73	73-74	74-75
Questionnaire	3.07	3.14	2.79	2.53	3.14	2.71	3.20	+2	-11	-9	+24	-14	+18
Field Bag Checks	3.00	2.98	3.07	3.03	3.51	3.51	4.81	-1	+3	-1	+16	0	+37

TABLE 2. Thirteen-year comparison of mourning dove age ratios collected in northern Utah, 1963-75.

Year	Sample Size	Immatures		Adults		Imm./100 Adults
		No.	%	No.	%	
1963	1,333	698	(47.6)	635	(52.4)	109
1964	1,492	727	(48.7)	765	(51.3)	95
1965	1,989	1,113	(56.0)	876	(44.0)	127
1966	3,148	1,730	(54.9)	1,418	(45.0)	122
1967	2,899	1,474	(50.8)	1,425	(49.2)	103
1968	2,827	1,663	(59.0)	1,164	(41.0)	143
1969	2,128	1,163	(55.0)	965	(45.0)	120
1970	1,146	620	(54.0)	526	(46.0)	118
1971	1,114	655	(58.8)	459	(41.2)	143
1972	1,577	812	(51.5)	765	(48.5)	106
1973	1,371	695	(50.7)	676	(49.3)	103
1974	1,556	891	(57.3)	665	(42.7)	134
1975	3,104	1,679	(54.1)	1,425	(45.9)	118
Totals	25,684	13,920	(54.2)	11,764	(45.8)	118

TABLE 3. Percent of harvest in relation to hatching dates of immature mourning doves in northern Utah, 1966-75.

Date Hatched	Age (Days)	Percent of Harvest by Hatch Date										Sample Size									
		1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Aug. 3	29	57.0	28.6	50.6	41.7	36.1	36.2	40.8	22.2	48.3	11.1	1007	408	832	479	224	236	322	154	428	177
July 31	32	15.6	14.1	26.9	23.9	30.8	23.0	27.2	21.4	28.6	24.3	272	201	443	275	191	150	215	149	253	389
July 25	38	10.8	18.4	11.6	17.6	17.2	17.2	15.7	18.8	14.3	32.3	189	263	192	202	107	112	124	131	127	517
July 18	45	6.5	17.0	5.2	9.0	9.4	10.3	9.6	15.4	3.7	18.4	113	242	87	104	58	67	76	107	33	295
July 9	54	3.6	10.9	3.1	4.0	3.9	7.8	3.9	9.9	2.3	8.6	63	155	51	46	24	51	31	69	20	137
June 30	63	3.1	6.4	1.7	2.5	1.9	2.9	2.3	6.8	1.1	5.3	54	92	29	29	12	19	18	47	10	85
June 21	72	1.7	4.0	0.4	0.9	0.6	1.8	0.2	3.7	1.2	--	30	57	7	11	4	12	2	26	11	--
June 8	85	0.6	0.6	0.06	0.2	--	0.5	0.1	1.6	0.4	--	10	8	1	2	--	3	1	11	4	--
May 22	102	0.2	--	--	--	--	0.2	--	0.1	--	--	3	--	--	--	--	1	--	1	--	--
Apr. 27	127	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Apr. 21	133	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		100	100	100	100	100	100	100	100	100	100	1741	1426	1642	1148	620	651	789	695	886	1600

TABLE 4. Statewide mourning dove harvest summary, 1951-1975.

Year	Hunters	Harvest	Hunter Days	Doves Bagged Per Day	Doves Bagged Per Season
1951	3,007	20,448	4,455	4.59	6.80
1952	6,420	49,498	10,784	4.59	7.71
1953	9,887	75,636	17,797	4.25	7.65
1954	9,901	75,941	19,729	3.85	7.67
1955	9,653	79,444	19,282	4.12	8.23
1956	10,744	95,729	20,411	4.69	8.91
1957	11,298*	86,769*	22,596*	3.84*	7.68
1958	11,853	85,934	23,706*	3.62*	7.25
1959	12,142	110,856	24,911	4.45	9.13
1960	12,440	108,477	25,766	4.21	8.72
1961	15,192	128,001	33,434	3.83	8.42
1962	14,660	145,008	34,281	4.23	9.89
1963	18,258	162,769	40,490	4.02	8.91
1964	19,829	193,538	51,671	3.74	9.76
1965	18,710	164,087	48,835	3.36	8.77
1966	20,594	212,696	60,554	3.51	10.31
1967	25,161	263,949	74,171	3.56	10.49
1968	25,105	207,922	70,186	2.96	8.28
1969	29,131	279,311	90,965	3.07	9.59
1970	23,908	232,469	73,984	3.14	9.72
1971	26,064	226,645	81,271	2.79	8.70
1972	29,341	238,354	94,046	2.53	8.12
1973	27,435	307,062	97,788	3.14	11.19
1974	34,021	306,076	112,967	2.71	9.00
1975	37,378	420,308	131,312	3.20	11.24
Totals (1951-75)	462,132	4,276,927	1,379,523	3.10	9.25
Averages (1951-74)	17,698	160,692	52,009	3.75	8.78

*Estimated based on hunter success and trends.

C. POPULATION TRENDS

The Breeding Density Index (BDI) indicated a decreased breeding population level. Such a decrease was not reflected in harvest data.

TABLE 5. Statewide mourning dove breeding population trends as indicated by random coo-count routes, 1958-75*.

Year	Average doves per route (Status Report)	Average doves per route (All Routes)
1958	15.0	
1959	22.9	
1960	18.6	
1961	14.8	
1962	13.6	
1963	13.4	
1964	12.9	13.0
1965	13.9	12.9
1966	15.0	13.5
1967	22.5	19.7
1968	12.8	15.2
1969	9.5	14.3
1970	7.9	13.4
1971	13.9	22.7
1972	9.3	14.3
1973	8.0	12.8
1974	12.2	19.3
1975	8.2	12.1
Average (58-74)	13.9	(64-74) 15.6

*Mourning dove coo-count routes were randomized in 1964, data for prior years was determined by proration.

D. BANDING

A total 2,688 doves were banded during 1975, all by Division of Wildlife Resources personnel. (Table 6).

TABLE 6. Preseason mourning dove banding by county and agency, 1975.

County	Agency		Total
	Division of Wildlife Resources	U.S.B.S.F. & W.	
Daggett	68		68
Duchesne	114		114
Emery	225		225
Garfield	46		46
Grand	1		1
Iron	117		117
Juab	290		290
Kane	181		181
Millard	322		322
Morgan	65		65
Piute	6		6
San Juan	415		415
Sevier	229		229
Tooele	251		251
Uintah	95		95
Washington	245		245
Wayne	18		18
Total	2,688	0	2,688

E. ANALYSIS OF BAND RECOVERIES

None

F. DEPREDATIONS

None

G. MISCELLANEOUS STUDIES

None

H. HUNTING SEASON RECOMMENDATIONS

Mourning Dove - September 1-30, 1976, is recommended with a bag limit of 10 and possession limit of 20.

I. SPECIAL PROBLEMS

None

MOURNING DOVE CALL-COUNT SURVEY

BUREAU OF SPORT FISHERIES AND WILDLIFE
OFFICE OF MIGRATORY BIRD MANAGEMENT, LAUREL, MD. 20810

SURVEY YEAR ~~1974~~ 1973

STATE | ROUTE NUMBER

COUNTY | PHYSIOGRAPHIC REGION

LOCATION OF ROUTE Wagon Hound – Asphalt

AT START – STOP NO. 1

WIND VELOCITY B- 0
TEMPERATURE 51 °F
% SKY CLOUDED 5 %
VEHICLE MILEAGE 13256.0

AT FINISH – MILE 20.0

WIND VELOCITY B- 1
TEMPERATURE 59 °F
% SKY CLOUDED 5 %
VEHICLE MILEAGE 13275.0

DATE OF SURVEY: 6 (MONTH) 3 (DAY)

WAS THIS ROUTE RUN BY *YOU* LAST YEAR? ☐ YES ☐ NO

LOCAL OFFICIAL SUNRISE TIME 5:21 AM

OBSERVER'S NAME Grandison

MAILING ADDRESS

AGENCY: State ☒ Federal ☐ Other ☐

Telephone (A/C ___) ___-____

ZIP CODE

STOP NUMBER	TIME AT STOP	DOVES HEARD		DOVES SEEN						DISTURBANCE				REMARKS
				WHILE STOPPED			WHILE DRIVING							
		NO. OF DOVES	TOTAL CALLS	SINGLES	IN PAIRS	IN FLOCKS	SINGLES	IN PAIRS	IN FLOCKS	NO	LO	MOD	HI	
1	5:21	1	3								X			
2	:	1	2									X		1
3	:	1	3		2						X			1
4	:	1	11								X			1
5	:	2	12	1			1	2						
6	:	1	3											
7	:	1	6					2						
8	:	2	13											1
9	:	2	10											1
10	:	2	18											1
11	:	1	8											1
12	:	3	20	2										1
13	:	3	22											1
14	:	1	6	1										
15	:	1	5											
16	:													1
17	:			1										
18	:	1	4											2
19	:							2						
20	7:15	1	5											8
TOTALS		25	156	5	2		1	6		TOTAL DOVES SEEN 14				

FORM 3-159
(Revised Nov. 1973)

(OVER)

FORM APPROVED

INSTRUCTIONS FOR MOURNING DOVE CALL-COUNT SURVEY

DATES OF SURVEY — Routes should be completed between May 20 and May 31, inclusive. *When unavoidable, the survey period will be extended to June 10.*

WEATHER CONDITION — Do not conduct survey when (1) wind velocities exceed Beaufort 3 (12 mph), (2) rain or snow is falling.

STARTING TIME — Start routes exactly 1/2 hour before sunrise. Determine sunrise time from an official source adjusted to route locality.

OBSERVER — When possible, the observer should run the same route in successive years. *The vehicle driver is the sole observer.* Persons accompanying the driver are not to participate in the collection of dove data.

SURVEY ROUTE — Routes are 20 miles in length, with 20 stops (listening stations) at 1-mile intervals. The route begins at Stop #1 and ends 1 mile *past* Stop #20.

PROCEDURE

Special Note — *Survey requires about 2 hours to complete. Allow exactly 3 minutes for counts at each stop an an average of 3 minutes for recording and travel time between stops.*

At Stop #1 — Record weather and vehicle mileage. Record wind velocity as B-0, B-1, B-2, or B-3, using Beaufort scale.

At Each Stop — Stop vehicle, turn off ignition, leave vehicle. Listen and observe for exactly 3 minutes, standing away from vehicle.
Record: (1) Time of *arrival* at stop.
(2) Total number of *individual* doves heard calling.
(3) Total number of calls. (*1 call usually consists of a preliminary note and 3 coos*).
(4) Number of doves seen while stopped. (*If 3 pairs are seen, enter numeral 6 in column "In Pairs".*)
(5) Disturbance affecting count at *each* stop.
(6) Remarks, if applicable to survey.

Between Stops — Maintain driving speed of about 25 miles/hour between stops.
Record: (1) Number of doves seen while driving. Enter data on same line as previous stop number.

At Finish — Record: (1) Weather conditions and vehicle mileage.
(2) Total all columns for doves heard and doves seen.

Check form for completeness and accuracy.

REPORTING — *Immediately* after the completion of each route:

(1) *Air Mail the original form directly to the Dove Section, Office of Migratory Bird Management, Laurel, Maryland, 20810.*
(2) Mail 1 copy to the State Supervisor of Game.
(3) Mail 2 copies of the completed form, plus the survey route map, to Federal Dove Survey Coordinator (person who sent the forms/map to you).
(4) Retain 1 copy for your personal file.

Beaufort Number	Velocity (mph)	Suggestions for Estimating Wind Velocity
0	less than 1	Smoke rises vertically.
1	1 to 3	Direction of wind shown by smoke drift, but not by wind vanes.
2	4 to 7	Wind felt on face, leaves rustle, ordinary wind vane moves.
3	8 to 12	Leaves and small twigs in constant motion; wind extends light flag.

Disturbance	Description	Example
NO	No appreciable effect on count.	Occasional crow calling.
LO	Slightly affecting count.	Distant tractor noise.
MOD	Moderately affecting count.	Intermittent traffic.
HI	Seriously affecting count.	Heavy-continuous traffic

MOURNING DOVE CALL-COUNT SURVEY

BUREAU OF SPORT FISHERIES AND WILDLIFE
OFFICE OF MIGRATORY BIRD MANAGEMENT, LAUREL, MD. 20810

SURVEY YEAR ~~1974~~ 1976

STATE | ROUTE NUMBER

COUNTY | PHYSIOGRAPHIC REGION

LOCATION OF ROUTE Bonanza - Watson

AT START – STOP NO. 1		AT FINISH – MILE 20.0	
WIND VELOCITY	B- 2	WIND VELOCITY	B-0
TEMPERATURE	53 °F	TEMPERATURE	59 °F
% SKY CLOUDED	8 %	% SKY CLOUDED	60 %
VEHICLE MILEAGE	12822.0	VEHICLE MILEAGE	12841.1

DATE OF SURVEY: 5 (MONTH) 28 (DAY)

WAS THIS ROUTE RUN BY *YOU* LAST YEAR? [X] YES [ ] NO

LOCAL OFFICIAL SUNRISE TIME _____ AM

OBSERVER'S NAME | MAILING ADDRESS | ZIP CODE

AGENCY: State ☒; Federal ☐; Other ☐ — Telephone (A/C ___) ___-____

STOP NUMBER	TIME AT STOP	DOVES HEARD		DOVES SEEN						DISTURBANCE				REMARKS
		NO. OF DOVES	TOTAL CALLS	WHILE STOPPED			WHILE DRIVING			NO	LO	MOD	HI	
				SINGLES	IN PAIRS	IN FLOCKS	SINGLES	IN PAIRS	IN FLOCKS					
1	5:24	3	13	0	0	0								
2	:	5	44											
3	:	3	36	1										
4	:	4	41	1	1									
5	:	2	14	1										
6	:	0	0											
7	:	2	9											
8	:	1	3											
9	:	1	4											
10	:	1	3	1										
11	:	0	0											
12	:	2	11											
13	:	0	0											
14	:	2	12											
15	:	1	5				1							
16	:	0	0											
17	:	0	0											
18	:	0	0											
19	:	0	0											
20	7:18	0	0											
TOTALS		27	195	4	1		1							

TOTAL DOVES SEEN: 6

FORM 3-159

(OVER)

FORM APPROVED

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WIND VELOCITY

Beaufort Number	Velocity (mph)	Suggestions for Estimating Wind Velocity
0	less than 1	Smoke rises vertically.
1	1 to 3	Direction of wind shown by smoke drift, but not by wind vanes.
2	4 to 7	Wind felt on face, leaves rustle, ordinary wind vane moves.
3	8 to 12	Leaves and small twigs in constant motion; wind extends light flag.

DISTURBANCE

Disturbance	Description	Example
NO	No appreciable effect on count.	Occasional crow calling.
LO	Slightly affecting count.	Distant tractor noise.
MOD	Moderately affecting count.	Intermittent traffic.
HI	Seriously affecting count.	Heavy-continuous traffic

DATE	LOCATION AND VEGETATION TYPE	SIGHTING TYPE	NUMBER & CLASSIFICATION	COMMENTS
3/24/76	Juniper-sage 1/2 mile NW of A-11	Radio	.17 and 4 uncollared deer.	
	Riparian. 1/4 mile downstream from X-2 cabins.	Radio	.02	
	Riparian. Under Evacuation pipeline - south side of river.	Radio	.06	
3/25/76	Riparian. 1/2 mile above Evacuation pipeline.	Radio	.06	
	Riparian. 1/4 mile below Ignacio - north side of river.	Radio	.02	
	Sage-shadscale - 1/4 mile NW of F-5.	Radio & Ocular	.09 and 2 fawns.	
3/30/76	Sage-shadscale - 1/4 mile East of G-22.	Radio	.17	

RSW Data for QR 1

DATE	LOCATION AND VEGETATION TYPE	SIGHTING TYPE	NUMBER & CLASSIFICATION	COMMENTS
3/30/76	Riparian. 1/8 mile NW of F-5	Radio	.09	
	Riparian. 1/4 mile upstream from Evacuation pipeline on north side of river.	Radio	.06	
	Riparian. One mile due west of X-2 - north side of river.	Radio	.02	
4/2/76	Sage-shadscale. 1/4 mile NW of F-5.	Radio & Ocular	.09 and 5 uncollared deer	
	Riparian. 1/2 mile above Evacuation pipeline on south side of river.	Radio	.06	
	Riparian. 3/4 mile due west of X-2, south side of river.	Radio	.17	
4/15	Sage- shadscale. 1/4 mile SW of X-2.	Radio & Ocular	.17 and 4 uncollared deer.	

DATE	LOCATION AND VEGETATION TYPE	SIGHTING TYPE	NUMBER & CLASSIFICATION	COMMENTS
4/15/76	Riparian. One mile due west of X-2, north side of river.	Radio	.02	
	Riparian. 1/4 mile up Evacuation Creek from mouth.	Radio & Ocular	.06 and 4 uncollared deer.	
4/19/76	Riparian. Directly across (N) river from F-5.	Radio	.09	
	Riparian. 1/4 mile NW of X-2. N. side of river.	Radio	.17	
4/21/76	Riparian. 1/8 mile upstream from Evacuation pipeline.	Radio	.06	
	Riparian. 1/2 mile west of X-2. South side of river.	Radio	.02	
	Riparian. 1/2 mile west of X-2. So. side of river.	Radio	.17	

DATE	LOCATION AND VEGETATION TYPE	SIGHTING TYPE	NUMBER & CLASSIFICATION	COMMENTS
4/21/76	Riparian. 1/4 mile N-NW of F-5. So. side of river.	Radio	.09	
4/24/76	Riparian. Under Evacuation pipeline. So. side of river.	Radio	.06	
	Riparian. One mile west of X-2. No. side of river.	Radio	.02	
	Riparian. Across river (N) from F-5.	Radio	.09	
4/28/76	Riparian. Across river (N) from F-5.	Radio	.09	
	Sage-shadscale. 1/2 mile SW of X-2.	Radio	.17	
	Riparian. 1/8 mile above Evacuation pipeline. N. side of river.	Radio	.06	

BIRD SPECIES LIST

OBSERVER: PEK + CVG MO.: 4 YR.: 76

DAY		SPECIES	G	J	COMMENTS	S	R
0	4	Say's Phoebe	X	X		X	X
		Sage Sparrow	X			X	
		Rock Wren	X	X		X	X
		Sage Thrasher	X			X	
		Starling				X	X
		Red-tailed Hawk	X	X		X	X
		Meadowlark	X			X	X
		Golden Eagle	X	X		X	X
		Kestrel	X	X		X	X
		Marsh Hawk				X	
		Mountain Bluebird	X	X		X	X
		House Finch	X	X		X	X
		Robin	X	X		X	X
		Dark-eyed Junco	X	X			X
		Pinon Jay	X	X			
		Rufous-sided Towhee	X	X			X
		Red-wing Blackbird			off-site		X
		Magpie	X	X		X	X
0	5	Common Flicker	X	X			X
		Common Raven	X	X		X	
0	6	Loggerhead Shrike	X			X	
		Bewick's Wren	X	X			X

BIRD SCHEDULE LIST OBSERVER: [illegible] MO.: 4 YR.: 16

DAY		SPECIES	G	J	COMMENTS	R
04		Say's Phoebe	X	X	X	X
		Sage Sparrow	X		X	
		Rock Wren	X	X	X	X
		[illegible] Thrasher	X		X	
		Starling			X	X
		Red-tailed Hawk	X	X	X	X
		Meadowlark	X		X	X
		Golden Eagle	X	X	X	X
		Kestrel	X	X	X	X
		Marsh Hawk			X	
		Mountain Bluebird	X	X	X	X
		House Finch	X	X	X	X
		Robin	X	X	X	X
		Dark-eyed Junco	X	X		X
		Pinon Jay	X	X		
		Lutton-sided Towhee	X	X		X
		Red-winged Blackbird				X
		Magpie			X	X
05		Common Flicker	X	X		X
		Common Raven	X	X	X	
06		Loggerhead Shrike	X		X	
		Bewick's Wren	X	X		X

BIRD SPECIES LIST

OBSERVER: PEK + CVG IND.: 4 YR.: 76

DAY		SPECIES	G	I	COMMENTS	R
0	6	Vesper Sparrow	X		X	
		Sandhill Crane			Flying over site X	X
		Horned Lark			X	
0	7	Canada Goose				X
		White-crowned Sparrow	X			X
		Lesser Goldfinch			off-site Common	X
0	8	White-throated Swift				X
		Killdeer				X
		Water Pipit				X
		Turkey Vulture			X	X
0	9	Downy Woodpecker				X
1	2	Plain Titmouse	X	X		
		Brewer's Blackbird			X	
		Mourning Dove	X		X	X
1	4	Black-throated Sparrow	X	X	X	
		Common Bushtit		X		
	6	Chipping Sparrow	X	X		

DAY		SPECIES	G	I	COMMENTS	P
06		Vesper Sparrow	X		X	
		Savannah Sparrow			X	X
		Horned Lark			X	
07		Canada Goose				X
		White-crowned Sparrow	X			X
		Lesser Goldfinch				X
07		White-throated Sparrow				X
		Killdeer				X
		Water Pipit				X
		Tree Swallow			X	X
09		Downy Woodpecker				X
12		Palm Warbler	X	X		
		Brewer's Blackbird			X	
		Mourning Dove	X		X	X
11		Black-throated Sparrow	X	X	X	
		Common Redpoll		X		
16		Chipping Sparrow	X	X		
		Page 4				

BIRD SPECIES LIST OBSERVER: [illegible] MO.: 4 YR.: 76

DAY		SPECIES	C	COMMENTS S	R
1	8	Prewar's Sparrow	X		X
		Mallard			X
1	9	Townsend's Solitaire		X	X
		Yellow-rumped Warbler			X
		Cooper's Hawk	X		
		Black-capped Chickadee			X
2	0	House Wren			X
		Blue-gray Gnatcatcher			X
	43	Hairy Woodpecker			X
2	1	Green-winged Teal			X
		Belted Kingfisher			X
2	2	Lark Sparrow		X	X
		Cinnamon Teal			X
		Virginia Rail off-site Goose Pond			X
		Savannah Sparrow		X	X
		Sharp-shinned Hawk		X	X
2	3	Broad-tailed Hummingbird			X
		Gadwall			X
		Greater Yellowlegs			X

DAY		SPECIES	♂	COMMENTS	♀
1	7	Prairie Warbler	X		X
		Field			X
1	7	Townsend's Solitaire		X	X
		Yellow-rumped Warbler			X
		Cooper's Hawk	X		
		Black-capped Chickadee			X
2	0	House Wren			X
		Blue-gray Gnatcatcher			X
	4	Hairy Woodpecker			X
2	1	Green-winged Teal			X
		Belted Kingfisher			X
2	2	Lark Sparrow		X	X
		Cinnamon Teal			X
		Virginia Rail off-site Gadwall			Y
		Savannah Sparrow		X	X
		Sharp-shinned Hawk		X	X
2	3	Broad-tailed Hummingbird			X
		Gadwall			X
		Greater Yellowlegs			X
		Pintail			

DAY		SPECIES	G	J COMMENTS	S 4/76		P
2	3	Violet-green Swallow					X
		Shoveler					X
		Great-horned Owl					X

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PEK + CVG

MAMMAL SPECIES LIST OBSERVER: ~~HKLCVC~~ MO.: 4 YR.: 76

DAY	SPECIES	G	CONSTANTS	S	R
04	Desert Cottontail	X	X	X	X
	White-tail Antelope Squirrel	X	X	X	
	Colorado Chipmunk	X			
	Sheep	X	X	X	X
	Mule Deer	X	X	X	X
05	Deer Mouse	X	X	X	X
	Kangaroo Rat (Ord)	X		X	X
	Apache Pocket Mouse	X	X	X	
06	Whitetail Prairie Dog			X	
10	Muskrat				X
12	Porcupine				X
	Piñon Mouse		X		
	Desert Woodrat	X	X		
13	Western Harvest Mouse	X			
	Least Chipmunk	X	X		
	Brush Mouse		X		
	Bushytail Woodrat		X		
15	Mountain Cottontail ?		X		

DAY		SPECIES	G	CONTAINTS	S	R
0	4	Desert Cottontail	X	X	X	X
		Whitetail Antelope Squirrel	X	X	X	
		Colorado Chipmunk	X			
		Sheep	X	X	X	X
		Mule Deer	X	X		X
0	5	Deer Mouse	X	X	X	X
		Kangaroo Rat	X		X	X
		Apache Pocket Mouse	X	X	X	
0	6	Whitetail Prairie Dog			X	
1	0	Muskrat				X
1	1	Porcupine				X
		Pinon Mouse		X		
		Desert Woodrat	X	X		
1	3	Western Harvest Mouse	X			
		Least Chipmunk	X	X		
		Brush Mouse		X		
		Rock Wren		X		
1	5	Mountain Cottontail		X		
		Plot 2				

DAY		Mammal SPECIES	G	COMMENTS	S 4/76	R
1	9	Yellow-bellied Marmot	X			
		Beaver				X
2	2	Golden Mantle Squirrel				?

P 3 of 2

HERP SPECIES LIST

OBSERVER: PEK+CVG MO.: 4 YR.: 76

DAY		SPECIES	G	J	S	R
0	4	Sagebrush Lizard	X			X
1	2	Side-blotched Lizard	X	X		
2	1	Tree Lizard				X
2	3	Gopher Snake	X			
		Yellow-bellied Racer				X

DAY		SPECIES	G	I COMMENTS S		P
0	4	Sagebrush Lizard	X			X
1	2	Side-blotched Lizard	X	X		
2	1	Tree Lizard				X
2	3	Gopher Snake	X			
		Yellow-bellied Racer				X

BIRDS SITE: Gracewood I WGI OBSERVER: PEK MO.: 4 YR.: 76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
12	heard say's phoebe			partly cldy. 5:655 E:720	
				0-5 mph	
	heard sage thrasher				
	heard pinyon jays				
	Mtn. Bluebird	003	02	♀ & ♂	
13	Mourning dove	001	01	5-10 mph S:635	/
				partly cldy E:704	
	Plain titmouse	035	01		
	heard passerine			bluebird	
14	Dark-eyed junco	001	04	0-5 mph S:645	
				partly cldy E:720	
	Passerine	025	06	sage Sparrow?	
	heard pinyon jays				
	Plain titmouse	035	02		
	heard passerine				
	heard rock wren				
	heard magpie				
15	Black-billed magpie	050	02	partly cldy. S:700	
				5-10 mph E:720	
	heard pinyon jay				
16	heard magpie			overcast S:655	
				5-10 mph E:720	
	heard flicker			1 rabbit	
	Pinyon jay	001	03		
	heard plain tit				
	END				

BIRDS

SITE: Greasewood 1 WG1 OBSERVER: PEK MO.: 4

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
1 2	heard say's phoebe			partly cldy. S: 6[illegible] E: 72 0-5 mph
	heard sage thrasher			
	heard pinyon jays			
	Mtn. Bluebird	0 0 3	0 2	♀ & ♂
1 3	Mourning dove	0 0 1	0 1	5-10 mph S: 63[illegible] partly cldy E: 7[illegible]
	Plain titmouse	0 3 5	0 1	
	heard passerine			1 bluebird
1 4	Dark-eyed junco	0 0 1	0 4	0-5 mph S: 645 partly cldy E: 720
	Passerine	0 2 5	0 6	sage sparrow?
	heard pinyon jays			
	Plain titmouse	0 3 5	0 2	
	heard passerine			
	heard rock wren			
	heard magpie			
1 5	Black-billed magpie	0 5 0	0 2	partly cldy. S: 700 5-10 mph E: 720
	heard pinyon jay			
1 6	heard magpie			overcast S: 655 5-10 mph E: 720 1 rabbit
	heard flicker			
	Pinyon jay	3 0 1	0 3	
	heard plain tit			
	Till.			

BIRDS SITE: Grasswood WG-2 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
12	Rock Wren heard			Partly Cldy S 0657 E 0714	
	Piñon Jay heard			2 Squirrels - 50m	
	Sage Sparrow	0 0 1	0 1		
13	Kestrel	0 0 5	0 1	Mostly Cldy Windy S 0834 E 0847	
				W 4 S - 3m	
14	Rock Wren heard			Partly Cldy S 0701 E 0725	
	Rock Wren	0 1 5	0 1	DC, 50 m	
	Black-throated Sparrow	0 1 5	0 1		
	Rock Wren	0 2 0	0 1		
	Piñon Jay heard				
	Piñon Jay	0 1 5	0 1		
	Sage Sparrow	0 1 5	0 1		
15	Piñon Jay	0 5 0	0 3	Partly Cldy Windy S 0656 E 0722	
	Piñon Jay	0 1 5	1 2		
	Rock Wren	0 1 5	0 1		
	Rock Wren	0 4 5	0 1		
	Piñon Jay	0 1 0	0 7		
	Piñon Jay	0 2 5	0 6		
	Sage Sparrow	0 3 0	0 1		
16	Black-throated Sparrow	0 2 0	0 2	Cloudy S 0701 E 0727	
	Rock Wren	0 2 0	0 1		

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	
1	2	Rock Wren heard						Partly Cldy	S 0657 E 0714
		Piñon Jay heard						2 Squirrels - 50m	
		Sage Sparrow	0	0	1	0	1		
1	3	Kestrel	0	0	5	0	1	Mostly Cldy Windy WAS · 3m	S 0834 E 0847
1	4	Rock Wren heard						Partly Cldy	S 0701 E 0725
		Rock Wren	0	1	5	0	1	DC, 50 m	
		Black-throated Sparrow	0	1	5	0	1		
		Rock Wren	0	2	0	0	1		
		Piñon Jay heard							
		Piñon Jay	0	1	5	0	1		
		Sage Sparrow	0	1	5	0	1		
1	5	Piñon Jay	0	5	0	0	3	Partly Cldy Windy	S 0656 E 0722
		Pinon Jay	0	1	5	1	2		
		Rock Wren	0	1	5	0	1		
		Rock Wren	0	4	5	0	1		
		Piñon Jay	0	1	0	0	7		
		Piñon Jay	0	2	5	0	6		
		Sage Sparrow	0	3	0	0	1		
1	6	Black-throated Sparrow	0	2	0	0	2	Cloudy	S 0701 E 0727
		Rock Wren	0	2	0	0	1		
		P 1 of 2							

BIRDS SITE: Greasewood WG-2 OBSERVER: CVG MO.: 4/76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
16	Rock Wren	025	01	
	Pinon Jay heard			
	Sage Sparrow	010	02	

P 2 of 2

BIRDS SITE: Greasewood 3° WG3 OBSERVER: PEK MO.: 4 YR.: 76

DAY		SPECIES	DIST.(m)			NO.		COMMENTS	X
1	9	Meadow lark	0	0	1	0	1	overcast / rained last time 0-5 mph S:640 E:705	
		Kestrel ♀	0	1	5	0	1	4 rabbits	
		Kestrel ♂	0	4	0	0	1		
		heard rock wren						3 different individuals	
		Loggerhead shrike	0	3	0	0	2	♂ & ♀	
		Black throated sparrow	0	2	5	0	2		
2	0	Black throated sparrow	0	1	5	0	2	0-5 mph S:645 Clear E:710	
		Black throated sparrow	0	3	5	0	1	4 rabbits	
		loggerhead shrike	0	2	0	0	1		
		Rock wren	0	5	0	0	1		
		heard meadow lark							
		Chipping sparrow	0	0	1	0	1		
		heard rock wren						2 different individuals	
		heard say's phoebe							
2	1	heard meadow Lark						high scat. clds. S:645 0-5 mph E:705	
		heard rock wren						1 rabbit	
		heard phoebe							
		Loggerhead shrike	0	3	5	0	2		
		Sparrow	0	0	1	0	1	Chipping?	
		heard meadowlark							
		heard rock wren							
								partly cldy 5-15 mph gusty	3 rabbits
2	2	heard Rock wren						continued S:715 E:740	

		SPECIES (Grease)	DIST. (m)	NO.	COMMENTS
1	9	Meadow lark	001	01	overcast / rained s:64 0-5 mph / last time e:70
		Kestrel ♀	015	01	4 rabbits
		Kestrel ♂	040	01	
		heard rock wren			3 different individu
		Loggerhead shrike	030	02	♂ & ♀
		Black throated sparrow	025	02	
2	0	Black throated sparrow	015	02	0-5 mph s:645 clear e:710
		Black throated sparrow	035	01	4 rabbits
		loggerhead shrike	020	01	
		Rock wren	050	01	
		heard meadow lark			
		Chipping sparrow	001	01	
		heard rock wren			
		heard say's phoebe			2 different individu
2	1	heard meadow Lark			high scat. clds s:645 0-5 mph e:705
		heard rock wren			1 rabbit
		heard phoebe			
		Loggerhead shrike	035	02	
		Sparrow	001	01	Chipping?
		heard meadowlark			
		heard rock wren			
2	2	heard Rock wren			partly cldy 3 rabbit 5-15 mph. gusty constant s:715 e:745

BIRDS SITE: Greasewood WG-3 OBSERVER: PEK MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	
2	2	Meadow lark	0	0	1	0	1	continued from #1	
		Rock wren	0	0	3	0	1		
		Sparrow - chipping?	0	0	1	0	2		
		Loggerhead shrike	0	1	5	0	1		
		Meadow lark	0	0	5	0	1		
		heard rock wren							
2	3	Kestrel ♂	0	0	1	0	1	5-10 mph gusty S:645 broken overcast E:710	
		Meadow lark	0	5	5	0	1	2 rabbits	
		Kestrel ♀	0	3	0	0	1		
		Vesper sparrow	0	1	2	0	2		
		White crowned	0	0	5	0	4		
		heard rock wren							
		Loggerhead shrike	0	2	0	0	?	♂ & ♀ ?	
		Sparrow ?	0	1	5	0	1		
		heard rock wren							
		heard Meadow lark							
		& Nit.							

BIRDS SITE: Juniper WJ-1 OBSERVER: CVG MO.: 7 YR.: 76

DAY		SPECIES	DIST. (m)	NO.	COMMENTS	
1	2	Piñon Jay	005	01	Partly Cldy S0747 Windy E0817	
		Piñon Jay	045	03	3DC, 20m, 10m	
		Piñon Jay	030	06		
		Plain Titmouse	010	02		
		Piñon Jay	002	02		
		Piñon Jay	015	01		
		Piñon Jay	010	01		
1	3	Piñon Jay	040	02	Mostly Cldy S0639 E0715	
		Piñon Jay	015	01	DC, 2m, 1M, 5m	
		Mountain Bluebird	045	02		
		Dark-eyed Junco	045	01		
		Rock Wrens heard				
		Piñon Jay	050	05		
		Mountain Bluebird	005	01		
		Mountain Bluebird	001	01		
		Piñon Jay	005	01		
		Pinon Jay	020	02		
1	4	Piñon Jays heard			Partly Cldy S0747 Breeze E0824	
		Plain Titmouse	040	01	DC, 25m, 2m, 15m Chipmunk, 15m	
		Piñon Jay	040	02	Bushytail Woodrat, 5m Mule Deer, 80m	
		Piñon Jay	030	03		
		Piñon Jay	001	01		
		Pl of 2				

BIRDS SITE: Juniper WI-1 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	NO.	COMMENTS
14	Common Flicker	030	01	
	Common Bushtit	005	01	
15	Piñon Jay	040	03	Partly Cldy S0748 windy E0825
	Piñon Jay	001	02	DC, 1m, 15m, 2m WAS. 20m
	Piñon Jay	030	10	
	Piñon Jay	020	04	
	Piñon Jay	010	02	
	Piñon Jay	003	08	
	Dark-eyed Junco	001	03	
	Piñon Jay	005	07	
	Plain Titmouse heard			
16	Piñon Jay	020	02	Cloudy S0754 windy E0835
	Piñon Jay	030	02	DC 1m, 2m, 5m
	Pinon Jay	060	04	
	Piñon Jay	005	04	
	Piñon Jay	001	01	
	Plain Titmice heard			
	P 2 of 2			

BIRDS SITE: Juniper WI-1 OBSERVER: CVG MO.: 4

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
1 4	Common Flicker	030	01	
	Common Bushtit	005	01	
15	Piñon Jay	040	03	Partly Cldy S07 windy E07
	Piñon Jay	001	02	DC, 1m, 15m, 2m WAS, 20m
	Piñon Jay	030	10	
	Piñon Jay	020	04	
	Piñon Jay	010	02	
	Piñon Jay	003	08	
	Dark-eyed Junco "	001	03	
	Piñon Jay "	005	07	
	Plain Titmouse heard			
16	Piñon Jay	020	02	Cloudy S0754 windy E0835
	Piñon Jay	030	02	DC 1m, 2m, 5m
	Pinon Jay	060	04	
	Piñon Jay	005	04	
	Piñon Jay	001	01	
	Plain Titmice heard			
	P 2 of 2			

BIRDS SITE: Juniper / WSL OBSERVER: TEK MO.: 4 YR.: 76

DAY		SPECIES	DIST.(m)			NO.		COMMENTS	X
19		heard rock wren						partly / 0-5 mph / S: 720 cloudy rained last E: 745 nite	
		Common Raven	0	3	5	0	2		
		Mtn. Bluebird	0	2	0	0	2	♂ & ♀	
		Sparrow	0	0	1	0	1		
		Chipping sparrow	0	0	3	0	5		
		Black throated sparrow	0	2	5	0	2		
		Rock wren	0	3	0	0	1		
		Pinyon jay	0	5	0	0	2		
20		House finch	0	0	1	0	5	clear S: 730 0-5 mph E: 800	
		Mtn blue bird	0	0	3	0	1	♂	
		Mtn bluebird	0	1	5	0	1	♀	
		heard rock wren							
		House finch	0	1	2	0	2		
		Black throated sparrow	0	1	2	0	1		
		Townsend's solitare	0	0	3	0	1		
		Plain. tit	0	2	0	0	2		
		Chipping sparrow	0	0	7	0	1		
		Robin	0	1	2	0	1		
		Mtn Bluebird	0	0	1	0	1		
		Chipping Sparrow	0	0	5	0	3		
21		heard Rock wren						calm S: 725 high scat. clds E: 800	
		heard pinyon jay						continued	
		Common Raven	0	5	0	0	1	page # 1 of 3	

OBSERVER: _____ MO.: 4 YR

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
19	heard rock wren			partly / 0-5 mph / S: 7 cloudy rained last / E: 7 nite
	Common Raven	035	02	
	Mtn. Bluebird	020	02	♂ & ♀
	Sparrow	001	01	
	Chipping sparrow	003	05	
	Black throated sparrow	025	02	
	Rock wren	030	01	
	Pinyon jay	050	02	
20	House finch	001	05	clear S: 730 0-5 mph E: 800
	mtn blue bird	003	01	♂
	mtn bluebird	015	01	♀
	heard rock wren			
	House finch	012	02	
	Black throated sparrow	012	01	
	Townsend's solitare	003	01	
	Plain tit	020	02	
	Chipping sparrow	007	01	
	Robin	012	01	
	Mtn Bluebird	001	01	
	Chipping Sparrow	005	03	
21	heard Rock wren			calm S: 725 high cat. clds E: 800
	heard pinyon jay			
	Common Raven	050	01	continued

BIRDS SITE: Juniper 2 WS2 OBSERVER: PEK MO.: 4 YR.: 76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS	X
2 1	House finch	030	05	continued	
	townsend's solitare	001	01		
	Pinyon jay	050	01		
	Mtn bluebird ♂	015	01		
	Plain tit	012	02		
	Chipping sparrow	001	02		
	House finch	005	03		
	mtn bluebird ♂	001	01		
	Say's phoebe	002	01		
	Bewick's wren	001	01		
	Black-throated sparrow	003	02		
	Rock wren	025	01		
2 2	heard finch			5-10 mph S:635 partly cldy S:700	
	heard rock wren				
	House finches	030	04		
	mtn. bluebird ♂	015	01		
	Black throated sparrow	020	01		
	Chipping sparrow	045	02		
	House finch	017	01		
	mtn bluebird ♀	005	01		
2 3	heard finches			5-10 mph gusty S:725 broken overcast S:750	
	heard rock wren			continued #	
	mtn bluebird ♂ & ♀	030	02	page #2 of 3	

DAY		SPECIES	DIST. (m)			NO.		COMMENTS	X
2	1	House finch	0	3	0	0	5	continued	
		townsend's solitare	0	0	1	0	1		
		Pinyon jay	0	5	0	0	1		
		Mtn bluebird ♂	0	1	5	0	1		
		Plain tit	0	1	2	0	2		
		Chipping sparrow	0	0	1	0	2		
		House finch	0	0	5	0	3		
		mtn bluebird ♂	0	0	1	0	1		
		Say's phoebe	0	0	2	0	1		
		Bewick's wren	0	0	1	0	1		
		Black-throated sparrow	0	0	3	0	2		
		Rock wren	0	2	5	0	1		
2	2	heard finch.						5-10 mph. S:635 partly cldy S:700	
		heard rock wren							
		House finches	0	3	0	0	4		
		Mtn. bluebird ♂	0	1	5	0	1		
		Black throated sparrow	0	2	0	0	1		
		Chipping Sparrow	0	4	5	0	2		
		House finch	0	1	7	0	1		
		mtn bluebird ♀	0	0	5	0	1		
2	3	heard finches						5-10 mph gusty S:725 broken overcast S:800	
		heard rock wren						cartwright	
		mtn bluebird ♂ ♀	0	3	0	0	2	page #2 of 3	

BIRDS SITE: Juniper WJ-2 OBSERVER: PEK MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
2	3	House finch	0	5	5	0	3	Continued from #2
		Pinyon jay	0	2	5	0	1	
		END						
								[illegible]

BIRDS SITE: Juniper 3° WJ3 OBSERVER: PEK MO.: 4 YR.: 26

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
1	2	heard jays						5-10 mph S: 730 partly cldy. E: 750
		heard rock wren						
1	3	Pinyon jay						5-10 mph S: 715 partly cldy E: 740
		Kestrel	0	0	1	0	2	front approaching
		Pinyon jay	0	5	0	0	6	
		Pinyon jay	0	1	5	0	2	
1	4	heard pinyon jays						0-5 mph S: 730 partly cldy E: 800
		Black-billed magpie	0	0	1	0	2	
1	5	heard flicker						5-10 mph S: 735 partly cldy E: 800
		heard pinyon jay						
1	6	heard rock wren						overcast S: 745 5-10 mph E: 820
		heard pass						
		Robin.	0	4	5	0	2	
		Bewick wren	0	2	5	0	1	
		heard pinyon jay						
		heard magpie						
		heard pinyon jay						
		END						

BIRDS SITE: Shadscale WS 1 OBSERVER: CVG 4/76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
05	Sage Sparrow	020	04	Cloudy S0636 Cool F0712
	Meadowlarks heard			DC, 40m, 15m
	Sparrows heard			
06	Meadowlarks heard			Partly Cldy S0645 Wind Cold F0720
	Sparrows heard			DC, 40m
	Sage Sparrow	010	01	
	Sage Sparrow	025	01	
	Rock Wren heard			
07	Meadowlarks heard			Partly Cldy S0648 Windy Cool F0735
	Vesper Sparrow	003	01	DC, 15m, 25m, 2-50m
	Vesper Sparrow	015	01	
	Horned Lark	001	01	
	Sage Sparrow	030	01	
	Rock Wren	015	01	
08	Sage Thrashers heard			Partly Cldy S0650 F0734
	Meadowlarks heard			2DC, 12m, DC 5m, 1m.
	Sage Thrasher	050	01	
	Sage Sparrow	025	02	
	Kestrel	001	01	
	Sage Sparrow	030	01	

BIRDS SITE: Shadscale WS-1 OBSERVER: CVG MO.: 4 YR.: 26

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
0	9	Sage Sparrow	0	0	3	0	2	Sct. Cld's 50647 Breeze F0729 DC 45M, 1M
		Meadowlarks heard						
		Sage Thrashers heard						
		Sage Sparrows heard						
		Sandhill Cranes heard						
		Canada Geese heard						
		Meadowlark	0	3	0	0	1	
		Rock Wren heard						
		Horned Lark heard						
		Page 3 of 3						

BIRDS SITE: Shadscale WS-2 OBSERVER: CVC MO.: 4 YR.: 76

DAY		SPECIES	DIST.(m)			NO.		COMMENTS
05		Sage Sparrow	0	0	3	0	1	Cloudy S 0725 Cool F 0741
		Western Meadowlark	0	0	1	0	1	
		Sage Sparrow	0	1	5	0	1	
		Meadowlarks heard						
06		Meadowlarks heard						Cloudy S 0736 Windy Cold F 0756
		Western Meadowlark	0	3	0	0	1	
		Passerine	0	2	0	0	1	
		Western Meadowlark	0	1	5	0	2	
		Western Meadowlark	0	0	3	0	1	
07		Western Meadowlark	0	2	0	0	1	Partly Cldy S 0750 Windy Cool E 0813
		Meadowlarks heard						
		Sage Sparrow	0	0	1	0	2	
		Sage Thrasher	0	2	5	0	2	
		Western Meadowlark	0	2	5	0	1	
		Sage Sparrow	0	0	2	0	4	
		Sage Thrasher	0	0	1	0	2	
		Sage Sparrow	0	0	3	0	1	
08		Sage Thrasher	0	3	0	0	1	Partly Cldy S 0750 F 0806
		Meadowlarks heard						
09		Meadowlark	0	1	0	0	3	Sct. Clds S 0746 Breeze F 0803

BIRDS SITE: Shadscale WS-2 OBSERVER: CVG MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
0	9	Meadowlark heard						
		Sage Thrashers heard						
		Rock Wren	0	4	0	0	1	
		Rock Wren	0	0	2	0	1	
		Meadowlark	0	3	0	0	1	
		Meadowlark	0	0	1	0	1	

BIRDS SITE: Shadscale 3° WS-3 OBSERVER: PEK MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
0	9	Meadow Lark	0	1	5	0	2	continued
		Sage Sparrow	0	0	5	0	2	
		Sage Sparrow	0	2	0	0	3	
		Say's Phoebe	0	6	5	0	1	
		Sage Thrasher	0	1	2	0	1	
		END						
								page # 2 of 2

BIRDS SITE: Shadscale 3 WS-2 OBSERVER: P.E.K. MO.: 4 YR. 76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
05	heard Meadow Lark			overcast S: 755 0-5 mph E: 815
	heard magpie			1 rabbit flushed.
	Sage Sparrow	001	10	
	Sage Sparrows	003	06	
06	heard Meadow Lark			5-10 mph S: 650 broken overcast E: 711
	Loggerhead Shrike	015	01	rained last night
	Sage Sparrow	001	02	
	Sage Sparrows	004	10	
	heard sage thrasher			
07	Rock Wren	020	01	broken overcast S: 655 0-5 mph E: 720
	heard Meadow Lark			sheep ≈ 50
	heard sage sparrow			
	Meadow Lark	055	01	
	heard Pauraque			
08	Meadow Lark	100	01	partly cldy S: 655 calm E: 715
	Sage Sparrows	007	02	≈ 75 sheep wandering thru area
	Meadow Lark	045	01	
	Sage Sparrows	005	02	
	Sage Sparrows	003	02	
09	Meadow Lark	035	01	clear S: 650 calm / ≈ 100 sheep on site E: 710
	continued			page # 1 of 7

BIRDS SITE: Riparian WR-1 OBSERVER: CVG MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
19		House Finch heard						Partly cldy S0727 E0800
		Rock Wren heard						DC 20m
		Downy Woodpecker	0	5	0	0	1	
		Flicker heard						
		Owl (Great-horned)	0	0	1	0	1	
		Magpie	0	1	0	0	1	
		Starling	0	2	0	0	2	
		Magpie	0	3	0	0	1	
		Magpie	0	5	0	0	1	
20		Robin	0	3	0	0	1	Clear S0745 E0831
		Passerine	0	1	0	0	1	
		Starling	0	0	1	0	2	
		Mallard	0	0	5	0	2	
		Blue-grey Gnatcatcher	0	0	1	0	1	
		Hairy Woodpecker	0	0	2	0	1	
		Robin	0	3	0	0	1	
		Rufous-sided Towhee	0	0	5	0	1	
		Canada Goose	0	2	5	0	1	
		Heard Flicker						
21		Belted Kingfisher	0	0	1	0	1	Scat. clds S0744 E0824
		Starling	0	2	0	0	2	Beaver Im
		Common Flicker	0	5	0	0	1	
		Pileated						

BIRDS SITE: Riparian WR-1 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	NO.	COMMENTS	X
21	Common Flicker	015	01		
	Heard Rock Wrens				
	Mtn. Bluebird				
	Rufous-sided Towhees				
	Robins				
	Black-capped Chickadees				
22	Canada Goose	0503	03	Partly Cldy 50745 Windy E0826	
	Common Flicker	015	01	DC. 25m	
	Black-capped Chickadee	020	01		
	Cinammon Teal	001	02		
	Rufous-sided Towhee	025	01		
	Canada Goose	070	01		
	Magpie	0H0	01		
	Magpie	001	01		
	Heard House Finch				
	Rock Wren				
23	Common Flicker	0501	01	Partly Cldy 50805 Windy E0837	
	Starling	001	01	DC. 20m	
	Black-capped Chickadee	005	02		
	Common Flicker	015	01		
	P2of2				

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
21	Common Flicker	015	01	
	Heard Rock Wrens			
	Mtn. Bluebird			
	Rufous-sided Towhees			
	Robins			
	Black-capped Chickadees			
22	Canada Goose	0500	03	Partly cldy 50745 Windy E0826
	Common Flicker	015	01	DC, 25m
	Black-capped Chickadee	020	01	
	Cinammon Teal	001	02	
	Rufous-sided Towhee	025	01	
	Canada Goose	070	01	
	Magpie	040	01	
	Magpie	001	01	
	Heard House Finch			
	Rock Wren			
23	Common Flicker	0500	01	Partly Cldy 50805 Windy E0837 DC, 20m
	Starling	001	01	
	Black-capped Chickadee	0050	02	
	Common Flicker	015	01	
	P 2 of 2			

BIRDS SITE: ~~Riparian~~ UR-2 WR-2 OBSERVER: ~~CVG~~ CVG MO.: 7 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
1	9	Turkey Vulture	0	1	0	0	3	Partly Cldy S 0630 E 0706
		Robin	0	1	0	0	1	
		Passerine (Finches?)	0	1	5	0	2	
		House Finch	0	2	5	0	1	
		Rufous-sided Towhee	0	2	0	0	1	
		Mourning Dove	0	3	0	0	2	
		Townsend's Solitaire	0	2	0	0	1	
		Townsend's Solitaire	0	1	0	0	1	
		House Finch	0	0	1	0	1	
		Say's Phoebe	0	1	0	0	2	
		House Finch	0	1	0	0	1	
		House Finch	0	0	2	0	2	
		House Finch	0	1	5	0	1	
		Mountain Bluebird	0	4	0	0	1	
2	0	Turkey Vulture	0	2	0	0	2	Clear S 0644 E 0729
		Canada Goose	0	2	0	0	2	Porcupine 75m 2DC 20m
		House Finch	0	1	0	0	1	Beaver 50m
		House Finch	0	1	5	0	1	
		Starling	0	2	5	0	1	
		Robin	0	0	5	0	2	
		Rufous-sided Towhee	0	2	0	0	1	
		Rufous-sided Towhee	0	3	0	0	1	
		House Finch	0	3	0	0	4	

BIRDS SITE: Riparian WR-2 OBSERVER: CVG G.VG. MO.: 4 YR.: 26

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
20	House Finch	005	02	
	Downy Woodpecker	002	01	
	Say's Phoebe	002	01	
	Robin	020	01	
	House Finch	010	01	
	Heard Meadowlark			
	Flicker			
	Black-capped Chickadee			
	Rock Wren			
	Magpie			
	Mountain Bluebird			
21	Turkey Vulture	050	02	Scat. clds S 0640 E 0727
	House Finch	001	01	DC 1m, 2m 3 Mule Deer 2m
	Canada Goose	020	11	
	Western Meadowlark	001	01	
	Kestrel	030	01	
	House Finch	040	01	
	Rufous-sided Towhee	010	01	
	Robin	020	01	
	House Finch	030	02	
	House Finch	005	02	
	Red-tailed Hawk	001	01	
	Kestrel	020	01	
	Page 1			

BIRDS SITE: Riparian WR-2 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	NO.	COMMENTS	X
21	Say's Phoebe	030	01		
	Robin	001	01		
	Robin	040	02		
	Heard Flicker				
	Mtn. Bluebird				
22	House Finch	030	02	Partly Cldy S 0640 E 0727	
	Black-capped Chickadee	005	01	Porcupine 30m, 50m DC 10m, 5m, 3@20m	
	House Finch	040	01		
	House Finch	001	02		
	Robin	020	01		
	Belted Kingfisher	030	01		
	Teal	030	02		
	Rufous-sided Towhee	020	01		
	Robin	002	02		
	House Finch	003	02		
	House Finch	001	02		
	Canada Goose	030	02		
	House Finch	005	02		
	Heard Meadowlark				
23	House Finch	005	03		
	House Finch	010	01	Partly Cldy Windy S 0651 E 0740	
	Robin	005	01		
	P3 of 4				

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
2	1	Say's Phoebe	0	3	0	0	1	
		Robin	0	0	1	0	1	
		Robin	0	4	0	0	2	
		Heard Flicker						
		Mtn. Bluebird						
2	2	House Finch	0	3	0	0	2	Partly Cldy S 0640 E 0727
		Black-capped Chickadee	0	0	5	0	1	Porcupine 30m, 50m. DC 10m, 5m, 30, 20m
		House Finch	0	4	0	0	1	
		House Finch	0	0	1	0	2	
		Robin	0	2	0	0	1	
		Belted Kingfisher	0	3	0	0	1	
		Teal	0	3	0	0	2	
		Rufous-sided Towhee	0	2	0	0	1	
		Robin	0	0	2	0	2	
		House Finch	0	0	3	0	2	
		House Finch	0	0	1	0	2	
		Canada Goose	0	3	0	0	2	
		House Finch	0	0	5	0	2	
		Heard Meadowlark						
2	3	House Finch	0	0	5	0	3	
		House Finch	0	1	0	0	1	Partly Cldy S 0651 windy E 0740
		Robin	0	0	5	0	1	
		P3 of 4						

BIRDS SITE: Riparian WR-2 OBSERVER: C.V.G. MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			NO.		COMMENTS
2	3	Mountain Bluebird	0	5	0	0	1	
		Yellow-rumped Warbler	0	0	2	0	2	
		Broad-tailed Hummingbird	0	0	3	0	1	
		House Finch	0	0	5	0	1	
		Yellow-rumped Warbler	0	0	5	0	1	
		Violet-green Swallow	0	3	0	0	1	
		Greater Yellowlegs	0	3	0	0	1	

Pg 1 of 1

BIRDS SITE: Riparian 3' WR-3 OBSERVER: P.E.K. MO.: 4 YR.: 76

DAY	SPECIES	DIST. (m)	NO.	COMMENTS
05	Rufous - sided towhee	015	01	overcast 0-5 mph S:645 E:717
	heard magpie			7 rabbits flushed
	heard Flicker			
	heard junco			
	Dark - eyed junco	003	15	
	Rufous sided towhee	005	02	♀♂
	Common Flicker	025	01	
	Kestrel	050	01	
06	Robin	003	05	5-10 mph S:730
	Kestrel	001	01	broken overcast E:800
	Passerine	001	02	rained last night
	Common Flicker	002	01	
	Dark - eyed junco	001	01	
	Dark - eyed junco	007	06	
	Passerine [Troglodytidae]			beswicks wren?
	heard rufous towhee			
07	Robin	030	02	broken overcast S:745
	heard towhee			0-5 mph E:815
	Robin	001	01	2 rabbit's
	Dark eyed junco	003	02	
	Rufous - sided towhee	002	01	
	Passerine	075	01	Rock wren?
	continued			page # 1 of 2

BIRDS STA.: OBSERVER: P.E.K. MO.: 4 YR.: 96

DAY		BIRDS SPECIES Riparian 3° WR-3	DIST. (m)			NO.		COMMENTS	
07		Robin	0	0	1	0	1	continued from pg 1	
		heard flicker							
		Black-billed magpie	0	0	1	0	1		
08		Killdeer	0	0	1	0	1	calm S:735 clear E:805	
		heard junco						4 rabbits	
		Kestrel	0	0	1	0	1		
		heard flicker							
		Rufous-sided towhee	0	0	1	0	1		
		Dark-eyed junco	0	0	3	0	4		
		Bewick wren	0	0	2	0	1		
		heard passerine?							
09		Passerine rufous-sided towhee?	0	0	3	0	1	clear S:240 0-5mph S:810	
		heard robin						3 rabbits Saw Bewick's wren again	
		heard towhee						after completion of T.	
		Sage sparrow	0	0	7	0	4		
		White-crowned sparrow	0	0	5	0	2		
		Dark-eyed junco	0	1	0	0	2		
		Rufous sided towhee	0	0	5	0	2		
		heard junco							
		Kestrel	0	5	0	0	2	♀ & ♂.	
		heard flicker							
		heard towhee							
		END							

MAMMALS SITE: Greasewood 1° WG OBSERVER: PEK MO.: 4 YR.: 76

DAY		SPECIES	DIST. (m)			COMMENTS
1	2	NONE				10-11 mph S: 1725 E: 1800
1	3	NONE				10-15 mph S: 1805
1	4	NONE				0-5 mph / overcast S: 1900 S: 1830
1	5	Least Chipmunk	0	>	5	partly cldy / 5-10 mph S: 1700 S: 1735
		Least Chipmunk	0	3	0	
		Desert Cottontail	0	0	1	
1	6	NONE				front approaching S: 1745 5-10 mph S: 1810 rain & snow
		END				

MAMMALS SITE: Grassland WG-2 OBSERVER: CVG MO.: 4 YR.: 76

DAY		SPECIES	DIST.(m)			COMMENTS	
1	2	Desert Cottontail	0	3	0	Partly Cldy Windy	S 1735 E 1750
1	3	Desert Cottontail	0	2	5	Cloudy Windy	S 729 E 1744
1	4	NONE				Cloudy Breezy	S 1729 E 1740
1	E	NONE				Partly Cldy Windy	S 1717 E 1724
1	6	NONE				Cldy Windy Snow + Rain	S 1735 E 1744

MAMMALS SITE: [illegible] OBSERVER: CJG MO.: YR.:

DAY		SPECIES	DIST. (m)			COMMENTS	
1	3	Desert Cottontail	0	3	0	Partly Cldy Windy	S 1735 E 1750
1	3	Desert Cottontail	0	0	5	Cloudy Windy	S 1731 E 1744
1	4	NONE				Cloudy Fresh	S 1729 E 1740
1	5	NONE				Partly Cldy Windy	S 1714 E 1726
1	6	NONE				Cldy, Windy Fresh Snow	S 1735 E 1744

MAMMALS SITE: Grassland 3' WG3 OBSERVER: PEK MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	COMMENTS
19	Yellow Belly Marmot	035	partly clay calm S:1800 E:1825
	Desert Cottontail	040	
	Desert Cottontail	040	} seen together
	Desert Cottontail	055	
	Desert Cottontail	025	
20	Desert Cottontail	025	0-5 mph partly cldy. S:1817 E:1835
21	Desert Cottontail	001	5-10 mph high overcast S:1735 E:1800
	Desert Cottontail	015	
	Desert Cottontail	035	
	Desert Cottontail	045	
	Desert Cottontail	045	} seen together
	Desert Cottontail	345	
22	Desert Cottontail	001	10-15 mph [illegible] S:1807 E:1830
	Desert Cottontail	001	
	Desert Cottontail	025	
23	Desert Cottontail	012	10-15 mph gusty partly cldy. S:1800 E:1825
			[illegible]
	END		

MAMMALS SITE: [illegible] OBSERVER: [illegible] MO.: 4 YR.: [illegible]

DAY		SPECIES	DIST.(m)			COMMENTS
1	9	Yellow Belly Marmot	0	3	5	partly cldy S:1800 calm E:1825
		Desert Cottontail	0	4	0	}
		Desert Cottontail	0	4	0	} seen together
		Desert Cottontail	0	5	5	
		Desert Cottontail	0	2	5	
2	0	Desert Cottontail	0	2	5	0-5 mph S:1817 partly cldy. E:1835
2	1	Desert Cottontail	0	0	1	5-10 mph S:1735 high overcast E:1800
		Desert Cottontail	0	1	5	
		Desert Cottontail	0	3	5	
		Desert Cottontail	0	4	5	}
		Desert Cottontail	0	4	5	} seen together
		Desert Cottontail	0	4	5	}
2	2	Desert Cottontail	[illegible]			10-15 mph / Cold S:1807 partly cldy / windy E:1830
		[illegible]	[illegible]			
		[illegible]	[illegible]			
2	3	Desert Cottontail	0	1	2	10-15 mph gusty S:1800 partly cldy E:1825
						yellow belly marmot seen
		END				

MAMMALS SITE: Juniper WT-1 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	COMMENTS
12	NONE		Partly Cloudy S 1817 E 1840
13	Bushytail Woodrat	005	Clear S 1806 F 1833
14	Desert Cottontail	005	Clear S 1804 E 1825
	Squirrel (White-tailed Antelope)	010	
	Desert Cottontail	005	
15	Desert Cottontail	025	Partly Cloudy S 1804 E 1822
16	Desert Cottontail	001	Cldy. Windy Rain/Snow S 1804 E 1825

MAMMALS SITE: [illegible] OBSERVER: [illegible] MO.: _____ YR.: _____

DAY		SPECIES	DIST.(m)			COMMENTS	
1	3	NONE				Partly cloudy	S 1817 F 1840
1	3	Pocketed Woodrat	0	0	3	Cloudy	S 1806 F 1823
1	4	Desert Cottontail	0	2	5	Cloudy	S 1804 F 1825
		Squirrel (unidentified type)	0	1	0		
		Desert Cottontail	0	0	5		
1	5	Desert Cottontail	0	2	5	Partly cl.	S 1804 F 1822
1	6	Desert Cottontail	0	0	1	Cloudy, wind, [illegible]	S 1804 F 1805

MAMMALS SITE: Juniper 2° W/Z OBSERVER: PEK MO.: 4 YR.: 76

DAY	SPECIES	DIST. (m)	COMMENTS
19	Desert Cottontail	001	partly cloudy calm S:1725 E:1742
20	NONE		partly cloudy calm S:1745 E:1803
21	NONE		hi 80 overcast 5-10 mph S:1815 E:1835
22	NONE		partly cloudy 5-10 mph / front S:1735 E:1755
23	Desert Cottontail	005	partly cloudy S: E:1742
	END		

MAMMALS SITE: [illegible] OBSERVER: [illegible] MO.: [illegible] YR.: [illegible]

DAY		SPECIES	DIST.(m)			COMMENTS	
1	9	Desert Cottontail	0	0	1	partly cloudy calm	S:1725 E:1742
2	0	NONE				partly cloudy calm	S:1745 E:1803
2	1	NONE				high overcast 5-10 mph	S:1815 E:1835
2	2	NONE				partly cloudy 5-10 [illegible]	S:1730 E:1744
2	3	Desert Cottontail	0	0	5	partly cloudy 0-5 mph	S:1[illegible] E:1742
		END					

MAMMALS SITE: Juniper 3° WJ3 OBSERVER: PEK MO.: 4 YR.: 7=

DAY	SPECIES	DIST.(m)	COMMENTS
12	NONE		partly cloudy S:1810 5-10 mph E:1830
13	NONE		front approaching S:1735 E:1753
14	NONE		0-5 mph / overcast S:1730 storm E:1750
15	Desert Cottontail	C C 1	partly clay / 5-10 mph S:1750 front approaching E:1810
16	Desert Cottontail	C C 1	front approaching S:1715 5-10 mph E:1730
	END		

TRANSECT SITE: _____ OBSERVER: _____ MO.: _____ YR.: _____

DAY		SPECIES	DIST. (m)			COMMENTS
1	2	NONE				partly cldy / 5-10 mph S: 1810 S: 1835
1	3	NONE				front of [illegible] approaching / S: 1735 [illegible]
1	4	NONE				0-5 mph / overcast S: 1730 [illegible]
1	5	Desert Cottontail	0	0	1	partly cldy / 5-10 mph S: 1750 front approaching E: 1810
1	6	Desert Cottontail	0	0	1	front approaching S: 1715 5-10 mph E: 1730
		END				

TRANSECT SITE: _____ OBSERVER: _____ MO.: _____ YR.: _____

DAY		SPECIES	DIST. (m)			COMMENTS
1	2	NONE				partly cldy / 5-10 mph S: 1810 S: 1835
1	3	NONE				front approaching S: 1735 [illegible]
1	4	NONE				0-5 mph / overcast S: 1730 storm [illegible]
1	5	Desert Cottontail	0	0	1	partly cldy / 5-10 mph S: 1750 front approaching E: 1810
1	6	Desert Cottontail	0	0	1	front approaching S: 1715 5-10 mph E: 1730
		END				

MAMMALS SITE: Shadscale WS-1 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	COMMENTS
05	Desert Cottontail	020	Cloudy Windy Rain S 1647 E 1742
06	Desert Cottontail	040	Cloudy Windy Light Rain S 1642 E 1717
07	Desert Cottontail	015	Cloudy Windy S 1636 E 1714
08	Desert Cottontail	005	Cloudy Windy S 1713 E 1745
	Desert Cottontail	001	
09	Desert Cottontail	030	Clear Windy S 1656 E 1727
	Whitetail Antelope Squirrel	060	
	Desert Cottontail	045	
	Desert Cottontail	001	
			Sheep on site
			From Mouth of Evac to X 2
			South to Duck Rock &
			Evac Creek, 2 herds

MAMMALS SITE: [illegible] OBSERVER: [illegible] MO.: [illegible] YR.:

DAY		SPECIES	DIST.(m)			COMMENTS
0	5	Desert Cottontail	0	3	0	Cloudy Windy Cold S 1647 E 1742
0	6	Desert Cottontail	0	1	0	Cloudy Windy S 1643 E 1717
0	7	Desert Cottontail	0	1	5	Sat Cld. Windy S 1636 E 1714
0	7	Desert Cottontail	0	0	5	Sat Cld. Windy S 1713 E 1745
		Desert Cottontail	0	0	1	
0	1	Desert Cottontail	0	3	0	Clear Windy S 1656 E 1727
		Whitetail Prairie Dog	0	6	0	
		Desert Cottontail	0	4	5	
		Desert Cottontail	0	0	1	
						Stopped at
						from Mouth of Frenchy X 2
						south to Dog Pole
						Four Green Shrubs

MAMMALS SITE: Shadscale WS-2 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	DIST.(m)	COMMENTS
05	NONE		Clear S 1758 Windy E 1807
06	NONE		Clear S 767 Windy E 1742
07	NONE		Clear S 1733 Windy E 1744
08	NONE		Clear S 1755 Windy E 1806
09	Desert Cottontail	001	Clear S 1737 Windy E 1749

MAMMALS SITE: _____ OBSERVER: _____ MO.: _____ YR.: _____

DAY		SPECIES	DIST. (m)			COMMENTS
05		NONE				[illegible] S 1758 E 1757
06		NONE				[illegible] S 1757 E 1742
07		NONE				[illegible] S 1733 E 1744
08		NONE				[illegible] S 1755 E 1[illegible]
09		Desert Cottontail	0	0	1	Clear [illegible] S 1737 E 1747

MAMMALS SITE: OBSERVER: MO.: YR.:

DAY		SPECIES	DIST. (m)	COMMENTS
05				
06				
07				
08				
09		NONE		clear
		END		

DAY		SPECIES	DIST. (m)			COMMENTS	
1	9	NONE				Partly cldy	S 1749 F 1811
						Start @ 2000 @ Hr.	
						from A11 to A6	
						@ 500-2000 at Hall's	
						Mule Canyon	
2	0	NONE				Scat. Cldy	S 1807 F 1828
2	1	Mule Deer	5	0	0	Mostly cldy	S 1816 F 1835
		Mule Deer	5	0	0		
		Mule Deer	1	0	0		
		Mule Deer	0	7	0		
		Mule Deer	0	7	0		
2	2	NONE				Partly cldy	S 1819 F 1839
2	3	NONE				Scat. clds	S 1801 F 1823

TRAPLINE: _____ OBSERVER: _____ MO: _____ YR: _____

DAY		SPECIES	DIST. (m)			COMMENTS	
1	2	Porcupine	0	7	0	Partially	S 1704 E 1725
		Desert Cottontail	0	1	7		
2	0	Porcupine	0	7	5	scat, clips Prints	S 1726 E 1750
		Desert Cottontail	0	4	0		
2	1	Desert Cottontail	0	4	0	[illegible]	S 1717 E 1749
		Desert Cottontail	0	1	0		
2	2	Porcupine	0	3	1	Partially	S 1722 E 1753
		Desert Cottontail	0	4	0		
2	3	Desert Cottontail	0	5	0	Scat, clips	S 1710 E 1738
		Desert Cottontail	0	0	5		
		Desert Cottontail	0	3	0		

MAMMALS SITE: [illegible] OBSERVER: [illegible] MO.: [illegible] YR.:

DAY		SPECIES	DIST.(m)			COMMENTS
0	5	[illegible]				
0	6	Desert Cottontail	0	1	0	[illegible]
		Desert Cottontail	0	1	0	
0	7	Desert Cottontail	0	0	1	Partly cloudy S:1645 E:1713
0	8	Desert Cottontail	0	0	1	[illegible] S:1725 E:1735
		[illegible]	0	1	1	
0	9	NONE				Clear S:1715 E:1740
		END				

ROUTE 3 SITE: [illegible] OBSERVER: [illegible] TR.: [illegible] YR.:

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Apache Pocket	A	F	0	0	2	0	1	4	4	1	12-1
			A	M	0	0	2	1	1	2	2	1	11-8
			A	M	0	0	0	8	1	0	0	1	9-4 ✓
			A	F	0	0	0	8*	0	9	5	1	8-2 AF #75,75,75,75 * [illegible]
			A	M	0	0	[illegible]	9	0	9	3	1	8-4 Am #21
			A	M	0	0	0	5	0	2	8	1	8-9 Am #67,67
			A	F	0	0	2	2	0	5	7	1	5-9
			A	M	0	0	1	3	0	1	2	1	4-7 Am #41,56
1	-		A	F	0	0	2	0	1	4	2	2	12-3
			A	M	0	0	0	8	1	2	5	2	11-5
			A	M	0	0	0	2	1	2	7	1	11-7 AF #25 #11,11
			A	F	0	0	2	3	1	2	7	1	11-9
			A	M	0	0	1	9	1	3	3	1	12-12 Am #111
			A	M	0	0	0	5	0	9	0	2	8-7 ✓
			A	M	0	0	2	4	0	7	6	1	7-4 Torpor
			A	M	0	0	0	9	0	9	1	2	8-3 ✓ Torpor
			A	M	0	0	1	3	0	5	1	2	5-3 ✓
			A	F	0	0	2	2	0	5	7	2	5-9
			A	M	0	0	2	5	0	2	7	1	3-3
1	4	trapping	S	US	[illegible]								

ODENTS SITE: Quonsett and OBSERVER: PEK MO.: 4 YR.: 76

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
12	Deer Mouse	J	M	0026	103	1	9-7
		A	M	27	098	1	9-2
		J	F	0028	119	1	10-2
		A	F	0029	120	1	12-1
		A	F	0030	016	1	2-4
		A	F	0031	005	1	1-5
		A	F	0032	002	1	1-2
13		A	M	0027	120	2	10-1
		J	F	0028	124	2	11-4
		A	M	0033	138	1	12-7
		A	M	0034	136	1	12-9
		J	M	0026	100	2	9-4
		A	M	0035	099	1	9-3
		A	F	0029	098	2	9-2 Dead
		J	F	0036	010	1	1-10
		A	F	0030	016	2	2-9
		A	F	0037	009	1	1-9
		A	M	0038	030	1	2-5
		A	X	---	004	0	1-4 escapee from Kennedy interfence
		A	F	0032	002	2	1-2
		A	M	0039	001	1	1-1
14	trapping	Suspended			---		

RODENTS SITE: OBSERVER: PM: m.

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Deer Mouse	J	M	0	0	2	6	1	0	3	1	9-7
			A	M			2	7	0	9	8	1	9-2
			J	F	0	0	2	8	1	1	9	1	10-2
			A	F	0	0	2	9	1	2	0	1	10-1
			A	F	0	0	3	0	0	1	6	1	2-9
			A	F	0	0	3	1	0	0	5	1	1-5
			A	F	0	0	3	2	0	0	5	1	1-2
1	3		A	M	0	0	2	1	1	2	0	2	10-1
			J	F	0	0	?	8	1	2	4	2	11-4
			A	M	0	0	3	3	1	3	8	1	12-7
			A	M	0	0	3	4	1	3	6	1	12-9
			J	M	0	0	2	6	1	0	0	2	9-4
			A	M	0	0	3	5	0	9	9	1	9-3
			A	F	0	0	2	9	0	9	8	2	9-2 Dead
			J	F	0	0	3	6	0	1	0	1	1-10
			A	F	0	0	3	0	0	1	6	2	2-9
			A	F	0	0	3	7	0	0	9	1	1-9
			A	M	0	0	3	8	0	2	0	1	2-5
			A	X					0	0	4	0	1-4 escaped from hardware cloth
			J	F	0	0	3	2	0	0	5	2	1-2
			A	M	0	0	3	9	0	0	1	1	1-1
1	4	trapping	SU	DC									

...DENTS SITE: Grassland grid OBSERVER: PEK MO.: 4 YR.: 76

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
2	Ords Kangaroo Rat	A	F	0005	041	1	6-12 AF #53, #63, 53
		A	M	0008	081	1	1-8 AM #53 #60, #60
3		A	F	0017	115	1	10-6
		A	M	0008	084	2	7-12 ✓
		A	F	0006	079	1	7-7 AM #65, 57, 65
		A	M	0018	074	1	7-2
		A	M	0002	051	1	5-3 AM #[illegible], 27
		A	F	0019	063	1	6-10
		A	F	0005	039	2	4-10 ✓
		A	F	0003	007	1	1-7 torpor AM ==[illegible]
4	trapping suspended			—	—	—	—

ROBERTO SITE: OBSERVER: PG: TR:

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Dipodomys merriami	A	F	0	0	0	5	0	6	1	1	6-12 AF #57, #63, 58
			A	M	0	0	0	8	0	0	7	1	1-8 AM #58, #60
1	3		A	F	0	0	1	7	1	1	5	1	10-6
			A	M	0	0	0	2	0	2	1	2	7-12 ✓
			A	F	0	0	0	6	0	7	9	1	7-7 AM #65, 57, 65
			A	M	0	0	1	8	0	7	4	1	7-2
			A	M	0	0	0	2	0	5	1	1	5-3 AM #19, 27
			A	F	0	0	1	9	0	6	2	1	6-10
			A	F	0	0	0	5	0	2	2	2	4-10 ✓
			A	F	0	0	0	3	0	0	7	1	1-7 AM tag pr #22
1	4	tropony SUST	Mod	Cl		—	—	—					

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Western Harvest											
1	3		A	F	0	0	0	1	0	1	7	1	2-8
1	4	trapping su	[illegible]	[illegible]	—	—	—	—	—	—			

ODENTS SITE: [illegible] OBSERVER: CVG MO.: 4 YR.: 7[illegible]

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
12	Deer Mouse	J	F		001	1	
	Deer Mouse	A	F		019	1	
	Deer Mouse	A	M		009	1	
13	Arizona Pocket Mouse	A	F		001	1	Trap #01 entered
	Deer Mouse	A	M		008	1	rodent escaped by chewing hole in trap
	Deer Mouse	A	M		009	2	
	Deer Mouse	A	M		011	1	
	Deer Mouse	A	M		012	1	
	Deer Mouse	J	M		013	1	
	Deer Mouse	A	F		016	2	

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP.	COMMENTS
1	2	Deer Mouse	I	F					0	0	1	1	
		Deer Mouse	A	F					0	1	9	1	
		Deer Mouse	A	M					0	0	9	1	
1	2	Apache Pocket Mouse	A	F					0	0	1	1	Trap tail external
		Deer Mouse	A	M					0	0	8	1	rodent escaped by chewing hole in door
		Deer Mouse	A	M					0	0	9	2	
		Deer Mouse	A	M					0	1	1	1	
		Deer Mouse	A	M					0	1	2	1	
		Deer Mouse	I	M					0	1	3	1	
		Deer Mouse	A	F					0	1	6	2	

ODENTS SITE: Juniper WJ-1 OBSERVER: CVG+DPL MO.: 6 YR.: 76

DAY	SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
3	Least chipmunk	A	M	0	0	0	2	0	1	2	1	AM = EH

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	3	Least chipmunk	A	M	0	0	0	2	0	1	2	1	pm = 54

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Deer Mouse	A	M	0	0	1	4	1	4	1	1	12 - 4
			A	F	0	0	1	0	1	3	6	1	12 - 9 AF #126,126
			A	F	0	0	1	5	1	2	9	1	11 - 9
			A	M	0	0	1	6	1	1	8	1	10 - 7
			J	F	0	0	1	7	0	6	2	1	6 - 5
1	3	Deer Mouse	A	F	0	0	1	8	0	0	3	1	
1	3		A	M	0	0	1	6	0	9	9	2	9 - 3 2nd
1	3		A	M	0	0	1	4	1	4	1	2	12 - 4
1	3		J	M	0	0	1	9	1	2	7	1	12 - 8
1	3		A	F	0	0	1		1	3	6	2	12 - 9
1	3		A	F	0	0	1	0	1	2	0	2	11 - 10 ✓

RODENTS SITE: Juniper WJ-1 OBSERVER: CVS + DPL MO.: 4 YR.: 76

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Desert Woodrat	A	F	0	0	0	8	1	2	2	1	11 – 2 IF # 104, 84, 122
		↓	A	M	0	0	1	2	0	1	5	1	2 – 10 IF #86, 103, 104.
1	3	Desert Woodrat	A	M	0	0	1	9	1	1	2	1	10 – 9
		↓	A	F	0	0	1	8	1	2	4	1	11 – 4

ROBERTO SITE: OBSERVER: PM: AM:

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP.	COMMENTS
1	2	[illegible]	A	F	[illegible]				[illegible]			1	11 – 2 ♀ #[illegible]
		↓	A	M	0	0	1	2	0	1	5	1	5 – 10 ♂ #[illegible]
1	3	Desert Woodrat	A	M	0	0	1	9	1	1	0	1	10 – 9
		↓	A	F	0	0	1	7	1	0	1	1	11 – 7

RODENTS SITE: [illegible] OBSERVER: [illegible] MO.: ____ YR.: ____

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
[illegible]	[illegible]	White-tailed Antelope S[illegible]	A	F	0	0	0	3	[illegible]	1	[illegible]	1	1 - 12

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	[illegible] Mouse	A	F	0	-	-	1	0	9	6	1	8 - 1 AF #42, 72, 112, 25
1	3	Pinon Mouse	A	M	0	0	-	5	0	3	5	1	
		↓	A	F	0	0	0	1	0	5	1	2	5 - 2 ✓
			A	M	0	-	0	6	1	1	9	1	10 - 2
			A	X					1	4	11	1	12 - 1

ODENTS SITE: Juniper WI-1 OBSERVER: CVG + DPL MO.: 4 YR.: 76

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
12	Apache pocket mouse	A	M	0004	099	1	JM #142,49
13	Apache Pocket Mouse	A	F	0003	091	1	8 -6 AF #23,49

DAY		SPECIES	AGE	SEX	TOE CLIP				TRAP #			CAP. #	COMMENTS
1	2	Apache pocket mouse	A	M	0	0	0	4	5	7	7	1	IM #142,4!
1	3	Apache Pocket Mouse	A	F	[illegible]	[illegible]	[illegible]	[illegible]	0	9	1	1	8 -6 AF #23,41

RODENTS SITE: Juniper 3° WJ3 OBSERVER: PEL MO.: 4 YR.: 74

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
1	2	Desert Wood Rat	A	m			1	
		Desert Wood Rat	A	m			1	
		Deer mouse	A	F			1	
		Deer mouse	A	m			1	
		Deer Mouse	A	m			1	
1	3	Brush mouse	A	F			1	
		Brush mouse	A	m			1	
		Desert Wood Rat	A	m			2	
		Desert Wood Rat	A	m			2	
		Pinyon mouse	A	m			1	
		Pinyon mouse	J	F			1	
		Deer mouse	A	m			2	
		Deer Mouse	A	F			2	
		Deer mouse	A	m			2	dead
4		front approaching traps not set last night						
5		trapping suspended						
		END						

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
1	2	Desert Wood Rat	A	m			1	
		Desert Wood Rat	A	m			1	
		Deer Mouse	A	F			1	
		Deer mouse	A	m			1	
		Deer Mouse	A	m			1	
1	3	Brush mouse	A	F			1	
		Brush mouse	A	m			1	
		[illegible]	A	m			2	
		Desert Wood Rat	A	m			2	
		Pinyon mouse	A	m			1	
		[illegible]	J	F			1	
		Deer mouse	A	m			2	
		Deer [illegible]	A	F			?	
		Deer [illegible]	A	m			2	dead
1	4	front operator's tree [illegible] last night		—	— — —	—	—	—
1	5	Trapper's sun[illegible]						
		END						

RODENTS SITE: OBSERVER: PD.: TR.:

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. ☆	COMMENTS
0 8	Deer Mouse	A	M	R 0 3 1	0 0 1	1	
		A	M	0 0 0 7	0 0 3	1	AM #25,25,28
		A	F	0 0 0 7	0 0 4	1	
		A	F	0 0 0 1	0 1 2	1	IM #6,5,,3,20,5
		A	M	0 0 3 3	0 1 4	1	
		A	F	0 0 1 4	0 0 0	1	IF #20 Lactating
		A	M	0 0 3 4	0 3 4	1	
		A	M	0 0 3 5	0 7 3	1	
		A	M	0 0 1 9	0 8 5	1	AM #40
		A	F		1 1 9	1	Dead Print
		A	M	0 0 3 6	1 1 3	1	
		A	M	0 0 3 7	1 0 5	1	
		A	F	0 0 3 7	1 1 2	1	
		A	F	0 0 3 9	1 0 8	1	
		A	M	0 0 4 0	1 3 2	1	
		J	M	0 0 4 1	1 3 5	1	
		A	F	0 0 4 2	1 3 6	1	
		I	F	0 0 4 3	1 3 8	1	Torpor
		I	F	0 0 4 4	1 3 7	1	
		A	F	0 0 4 5	1 2 1	1	
		A	M	0 0 4 6	1 4 4	1	

Pg 1 of

ROBERTO SITE: ROBERVER: TIME: TIME:

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
	Peromyscus P.	A	F	0 0 0 2	1 0 2	1	AM [illegible] 133, 132, 140

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
7	Apodemus sylvaticus	A	M	0021	017	1	
	↓	A	F	0022	022	1	Tuppy
		A	M	0023	099	1	

RODENTS SITE: Shadscale WS-2 OBSERVER: CVG MO.: 4 YR.: 76

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
05	Deer Mouse	A	F		6	1	NET # NUMB?
	Deer Mouse	A	M		16	1	½ tail

RODENTS SITE: [illegible] OBSERVER: [illegible] MO.: ____ YR.: ____

DAY	SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
[illegible]	Deer Mouse	A	F		6	1	NE #1 NW #?
	Deer Mouse	A	M		16	1	½ tail

ROBERTO SITE: OBSERVER: TIME: TR:

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP. #	COMMENTS
0	5	Deer Mouse	A	M			1	
		Deer Mouse	A	F			1	pregnant
		Deer Mouse	A	F			1	
		Deer Mouse	A	M			1	
		Deer Mouse	A	M			1	
		Deer Mouse	A	M			1	
		Apache [illegible]	A	M			1	[illegible] subadult
		Ord's [illegible]	A	F			1	
0	6	no traps set [illegible]						
0	7	[illegible]						
0	8	no traps [illegible]						
0	9	"						
		(T)						

DAY		SPECIES	AGE	SEX	TOE CLIP	TRAP #	CAP.	COMMENTS
0	5	Deer mouse	A	F			1	
		Deer mouse	A	M			1	
		Deer mouse	A	m			1	
		Deer mouse	A	F			1	pregnant
		Deer mouse	A	m			1	
		Deer mouse	A	M			1	escape
		Ords Kangaroo rat	A	M			1	
		Ords Kangaroo rat	A	F			1	tagger
0	6	no traps set						
0	7	no traps set						
0	8	no traps set						
0	9	"						
		fin						

VERTEBRATES

R. D. Anderson

Reptiles, Amphibians and Birds

A decision was made in 1971 not to sample reptiles and amphibians since so few are found on the sites. Birds were not sampled in 1974.

Rodents

Introduction

A live-trapping program that began in August 1971 for the estimation of rodent density and biomass was continued in 1973. In 1974, the program was restricted to an August sample on the south shrub and grass sites only. The northern sites were not sampled as that portion of the validation study had been discontinued.

Methods

The field methods used were essentially the same as those used since 1971 and described in Balph et al. (1973). The trap design remained a 12 x 12 grid with two traps per station, 15 m between stations. Traps were operated for five nights per sample. All animals captured were marked by toe clipping.

Analytical methods differed from previous years. All live-trapping data from 1971 to 1974, inclusive, were run on a new program written for this study by Kim Marshall of the Desert Biome Data Processing Group. This program computes numeric estimates of population size using eight different estimators and allows the user to compare and decide which to use. Traditional capture-recapture estimators, such as the Schnabel (1938), as modified by Overton (1965), the Schumacher-Eschmeyer (1943) and the Jolly (1965), are included as well as several based upon frequency of capture distributions (Edwards and Eberhardt 1967, Eberhardt 1969, Tanton 1965).

There was much discrepancy between the various estimators, with a surprising number of capture-recapture estimates lower than the number of animals actually observed. In fact, out of 69 separate estimates, only 27.5% of those calculated using the Schnabel formula (the method used in previous Curlew Valley validation work) and 29% of the Schumacher-Eschmeyer estimates exceeded the number of animals actually captured by one or more, with only 13.1% of both types equaling or exceeding the number of animals actually captured by less than one.

The Jolly estimator performed even more poorly, with daily estimates exceeding the number of animals actually captured by one or more; an average of only 19.1% of the time.

The various frequency of capture estimators in nearly all cases (the few exceptions being with the negative binomial estimator, which is a special case), estimated greater than the number of animals actually captured. The problem lies in determining which estimator provides the most realistic estimate of numbers. It may not be enough to accept the estimate of the best-fitting distribution, as the traditional goodness-of-fit tests, such as chi-square, may not be sensitive enough, as shown by Roff (1973).

The Curlew Valley validation data support Roff's (1973) contention that tests such as chi-square may not be sensitive enough to discriminate between different distributions. In many cases there appears to be no significant difference in goodness-of-fit between any of the four types tested (geometric maximum likelihood, geometric regression, Poisson, negative binomial) with Curlew Valley data. Although none may deviate significantly from the observed data, there is a great deal of difference between estimates of the number of animals not captured. Figures 42 to 44 demonstrate this with data for *Peromyscus maniculatus*, *Perognathus parvus* and *Eutamias minimus*, captured in the ART-ATR-SIT vegetation type (hectare 15) on the south shrub site in 1974. Selecting the distribution showing the lowest chi-square value (i.e., best fit) may not be enough, as shown by Roff's (1973) simulation work where the distribution with the lowest chi-square value gave the worst estimate, far exceeding the known population.

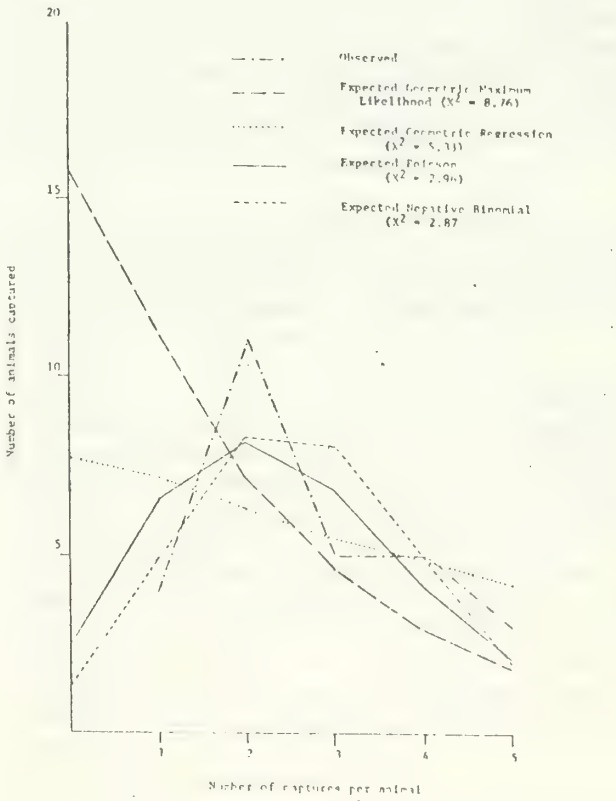

Figure 42. Goodness-of-fit of observed *Peromyscus maniculatus* frequency-of-capture data to the expected values of four different distributions, south shrub site, hectare 15, August 1974.

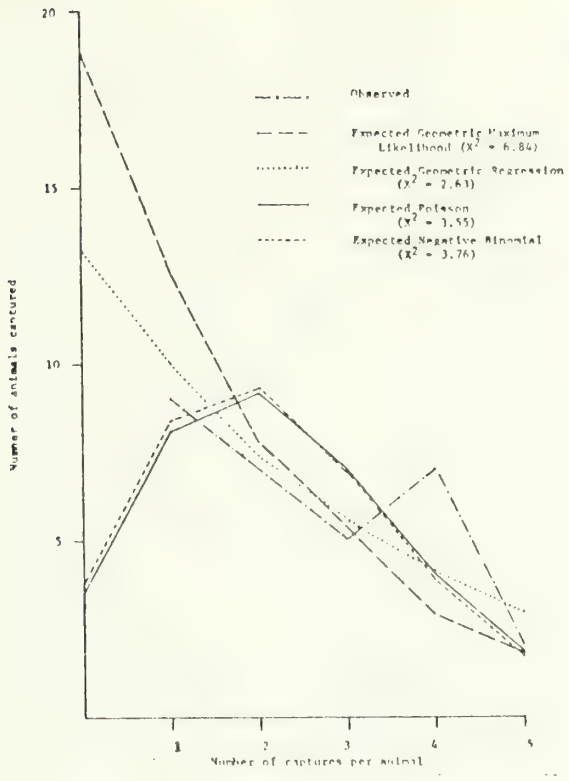

Figure 43. Goodness-of-fit of observed *Perognathus parvus* frequency of capture data to the expected values of four different distributions, south shrub site, hectare 15, August 1974.

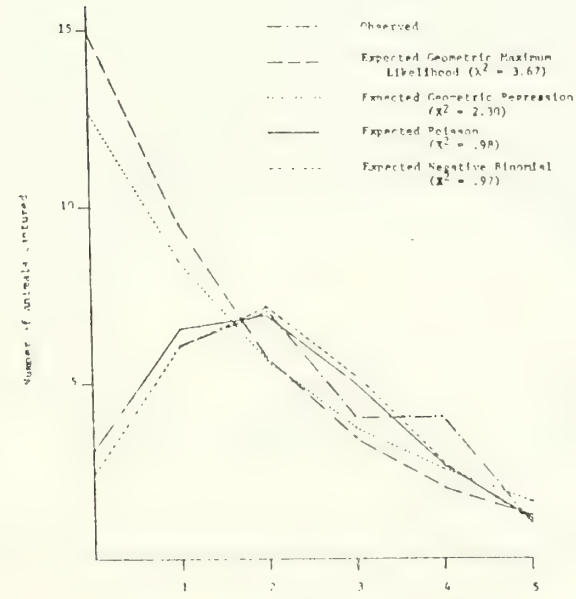

Figure 44. Goodness-of-fit of observed *Eutamias minimus* frequency-of-capture data to the expected values of four different distributions, south shrub site, hectare 15, August 1974.

Generally, the two types of estimates based upon the geometric distribution tended to be larger than the other estimators used, with the geometric maximum likelihood estimate being the largest.

Because of the problems of interpretation, it was decided to follow the precedent of Krebs (1966), Maza (in Turner and McBrayer 1974) and others, and base all density and biomass estimates for 1974 upon the number of animals actually captured. It is felt that, although this is a minimum estimate, it is at least a known quantity. A strong supporting argument in favor of using such a minimum estimate is that cumulative capture curves begin to level off after three to five days of trapping, indicating that, by that time, the bulk of the trappable animals have been captured (Figs. 45-47). All density and biomass estimates since 1971 on the southern sites have been revised in this manner and are presented here in tabular and graphical form.

Home Range and Estimated Area Sampled

Home range estimates are based upon the Jennrich and Turner (1969) elliptical estimator as in previous reports although the means of pooling individual estimates to derive a mean home range area for each species was changed.

In past years the estimate of area sampled in each sampling period was based upon the pooled home range size of each species captured in that sample (Turner et al. 1971). There were often only one or two individuals with enough capture points to allow an estimate of home-range areas and the estimate of sampling area was based upon these few animals. When no home-range area could be calculated, the area of the trapping grid was arbitrarily expanded by the distance between the traps (Balph et al. 1973) as an approximation of the area sampled.

In this report, it was decided to follow the lead of B. Maza of the Rock Valley Validation Site study (Turner and McBrayer 1974), and base the estimate of area sampled upon the mean home-range size of each species, based on all captures since the beginning of the program.

All Curlew Valley live-trapping data were searched and each animal that met certain criteria (a minimum of three captures at three different points not in a straight line) was listed by species with the home-range area calculated by the Jennrich and Turner (1969) method. The mean distance between successive captures (Brant 1962) as well as the numbers of captures for each individual were also listed. Means and confidence limits at the 90% level ($P < .10$) were calculated for all these parameters. Three species, *Peromyscus maniculatus*, *Perognathus parvus* and *Eutamias minimus*, had enough individuals for meaningful analysis with 187, 116 and 48, respectively. Results for these species are shown in Table 48.

In addition to these basic statistics, these data were subjected to a step-wise multiple regression analysis with home-range area as the Y variable and the other parameters as the Xi's.

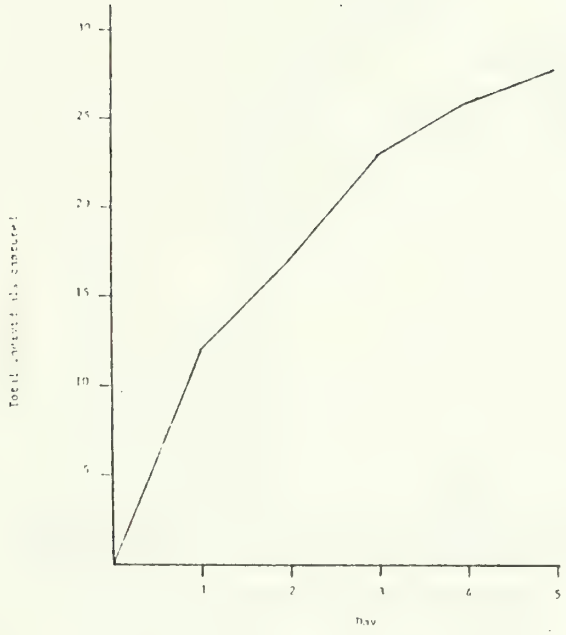

Figure 45. Cumulative capture curve for *Peromyscus maniculatus* on the south shrub site, hectare 15, August 1974.

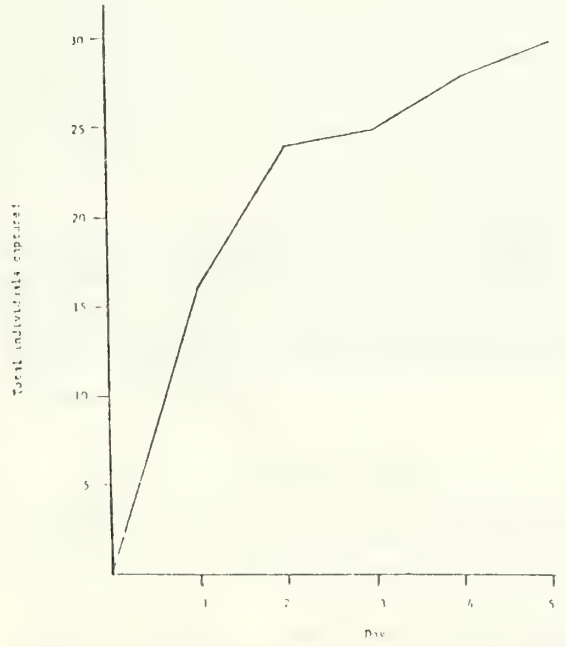

Figure 46. Cumulative capture curve for *Perognathus parvus* on the south shrub site, hectare 15, August 1974.

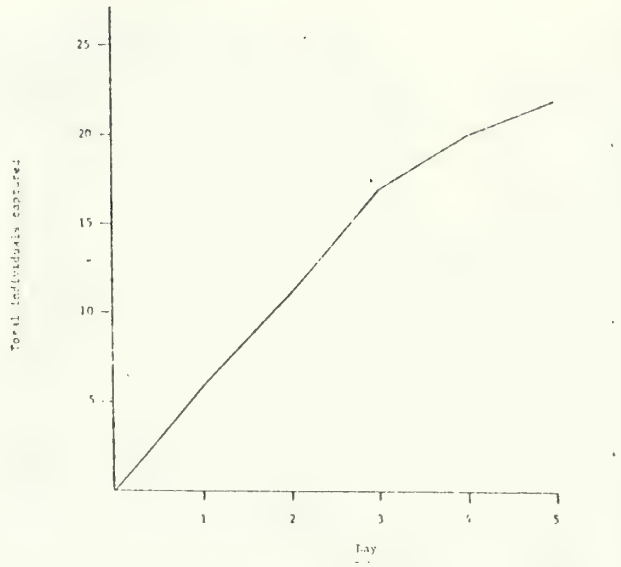

Figure 47. Cumulative capture curve for *Eutamias minimus* on the south shrub site, hectare 15, August 1974.

Based upon these analyses, it was decided to use the mean home-range area calculated with all the data since 1971 as a standard home-range area for these three species and to expand the sampling grid area by a factor of this area as an estimate of the area sampled as described by Maza et al. (1973) and in Turner and McBrayer (1974). This is accomplished by converting the pooled home-range area to a circle, computing the diameter and then adding that distance (meters) to the side of the trapping grid (165 m). This distance is then squared to estimate the total area actually sampled (Turner et al. 1971).

For the other species, the grid is expanded by adding twice the mean distance between successive captures (based on all the data since 1971) to the side of the trapping grid. This is consistent with Brant (1962), who felt that the mean distance between successive captures was a range size in *Microtus* sp. Also, the regression analysis done with these data indicates that this parameter is by far the most important of those tested. The regression analysis of the mean distance between successive captures against the Jennrich and Turner home-range area gave r^2 values of .64 for *Eutamias*, .46 for *Peromyscus* and .58 for *Perognathus*. Addition of all the other variables (maximum distance across captures, number of captures, year, site, hectare) raised the r^2 values an average of only .059.

In those few cases where neither home-range area nor distance between successive captures could be calculated, the sampling-grid size was arbitrarily expanded by adding twice the distance between trap stations (15 m) to the side of the trapping grid.

The standard values for the estimated area sampled for each species based upon these analyses are shown in Table 49.

Table 48. Means and 90% confidence intervals of various movement parameters based upon pooled 1971-74 Curlew Valley data

Species	Number of Individuals		Number of Captures	Mean Distribution Between Successive Captures (m)	Maximum Distance Across Captures (m)	Home range (hectares)
PERMAN	187	$\bar{X}$	4.08	37.72	64.92	.90
		90%CI	3.98-4.18	35.12-40.31	60.76-69.12	.74-1.05
PERPAR	115	$\bar{X}$	3.79	29.86	46.23	.65
		90%CI	3.68-3.91	26.94-32.77	41.69-50.77	.51-.79
EUTMIN	48	$\bar{X}$	3.63	54.04	83.65	1.72
		90%CI	3.47-3.78	47.51-60.57	74.11-93.25	1.24-2.20
DIPMIC	13	$\bar{X}$	----	52.64	----	---
		90%CI		33.6-71.67		
DIPORD	26	$\bar{X}$	----	24.35	----	---
		90%CI		18.34-30.35		
ONYLEU	9	$\bar{X}$	----	41.43	----	---
		90%CI		26.88-55.98		
LAGCUR	5	$\bar{X}$	----	20.41	----	---
		90%CI		13.28-27.54		
REIMEG	2	$\bar{X}$	----	34.06	----	---

Table 49. Standard values of area sampled and mean weight used in density and biomass calculations. Based upon pooled 1971-74 data for each species (see Table 48)

Species	Estimated Area Sampled (Hectares)	Mean Air-Dry Weight (Grams)
PERMAN	7.4	4.78
PERPAR	6.55	4.91
EUTMIN	9.8	8.64
ONYLEU	6.14	5.97
DIPORD	4.57	13.61
DIPMIC	7.31	17.69
LAGCUR	4.24	5.85
REIMEG	3.8	2.65

Biomass

Biomass estimates for each species are based upon the mean weight of all individuals captured on the southern sites since 1971. The assumption of a 70% water content was made in converting live weights to an estimated dry weight (Golley 1960). These standard dry-weight values for each species are listed in Table 49.

Results and Discussion

The three most important rodent species in Curlew Valley (as indicated by live-trapping), in terms of numbers and distribution, are *Peromyscus maniculatus*, *Perognathus parvus* and *Eutamias minimus*. Other species may also be important, but do not appear so due to the biases in live-trapping. There is some evidence of this in that *Lagurus curatus*, and other microtines, are apparently an important item in the diet of both coyotes (Steve Hoffman, pers. comm.) and badgers (Lindsey 1971) in Curlew Valley, although they are very uncommon in live-traps. Table 50 lists the rodent species that have been observed to date on the Curlew Valley Validation Site. The presence of *Mus musculus* in the table is not indicative of a resident population. Only one individual of this species has been observed on the south sage site (in 1973) and probably represents an accidental introduction to the site. The individual in question was probably transported to the site in a truck carrying traps and equipment from Snowville.

Revised density and biomass estimates for all samples taken on the southern sites, as well as the sex and age structure of the 1974 samples since 1971, are given in Tables 51-81. These revised estimates are based on the number of animals observed rather than on some mathematical estimator and should be viewed as minimum estimates of population size. The change in the method of estimating the area actually sampled has resulted in a reduction in the magnitude of apparent density fluctuation but with little change in the relative trends.

Figures 48 through 52 show the changes in density of the southern sites' three most important species, *Peromyscus maniculatus*, *Perognathus parvus* and *Eutamias minimus*, since 1971. An attempt has been made to correlate these changes in density to changes in precipitation, but with little success. Such a correlation has been shown for *Perognathus parvus* in south-central Washington (O'Farrell et al. 1975). In that study, changes in *Perognathus* density correlated with the preceding October-April precipitation ($r = .99$) rather than with annual precipitation. Although precipitation is undoubtedly an important climatic variable in Curlew Valley, there may be others, such as spring minimum temperatures, that confound the correlation with rodent density. Even though precipitation is adequate for germination and growth of annual vegetation, late spring freezing temperatures could kill newly germinated seedlings and cause a relatively poor annual crop.

As shown in Figure 50, *Eutamias minimus* populations on the south shrub site have been fairly stable over the period since 1971. Populations of both *Peromyscus maniculatus* (Fig. 48) and *Perognathus parvus* (Fig. 49) have fluctuated much more, with *Peromyscus* showing a peak in 1972 and *Perognathus* showing a peak in 1973.

Table 50. Rodent species observed on Curlew Valley validation sites

Species	Species Code	N. Shrub	N. Grass	S. Shrub	S. Grass
Spermophilus townsendii	SPETOW			X	X
Ammospermophilus leucurus	AMOLEU	X			
Eutamias minimus	EUTMIN	X	X	X	X
Perognathus parvus	PERPAR	X	X	X	X
Dipodomys microps	DIPMIC			X	X
Dipodomys ordii	DIPORD	X		X	
Reithrodontomys megalotis	REIMEG		X	X	X
Peromyscus maniculatus	PERMAN	X	X	X	X
Peromyscus truei	PERTRU		X		
Onychomys leucogaster	ONYLEU	X	X	X	
Mus musculus	MUSMUS			X	
Lagurus curtatus	LAGCUR	X	X	X	X

Table 51. Estimated rodent density and biomass in the ART-ATR-SIT vegetation type on the south shrub site, hectare 15, August 1971. Density and biomass calculated using the standard values for area sampled and mean weight from Table 49

Species	Number captured	Estimated density number/hectare	Estimated air-dry biomass grams/hectare
DIPMIC	2	0.27	4.84
EUTMIN	4	0.41	3.53
ONYLEU	1	0.16	.972
PERMAN	7	0.95	4.52
PERPAR	3	0.46	2.25

Table 52. Estimated rodent density and biomass in the ART-ATR-SIT vegetation type on the south shrub site, hectare 15, August 1972. Density and biomass calculated using the standard values for area sampled and mean weight from Table 49

Species	Number captured	Estimated density number/hectare	Estimated air-dry biomass grams/hectare
DIPMIC	9	1.23	21.78
EUTMIN	15	1.43	12.14
PERMAN	12	1.62	7.75
PERPAR	32	4.88	23.99

The periodic sampling (April, June, August) on the south shrub site indicated a decrease in the density of all three species in the HAL-ART vegetation type (hectare 75) from April to August. This is coupled with a density increase in the ANNUALS vegetation type (hectare 72). This may be indicative of a movement of animals into the ANNUALS area as seeds became available. It is now planned to conduct a similar, periodic sampling program in at least the ART-ATR-SIT vegetation type (hectare 15). Trapping will be done at two- to three-week intervals throughout the entire season, with the goal of gaining a better understanding of seasonal changes in rodent populations.

As part of another research program, a portion of hectare 60 (80 x 120 m) on the south shrub site was plowed and seeded with *Agropyron desertorum* during the summer of 1974. It was decided to make use of this experimental opportunity and to trap the plowed area, plus the adjacent undisturbed shrub community. The results are shown in Tables 70 and 71. No animal was captured within the plowed area, although a large number were captured in the adjacent shrub area. The density estimates reported in Table 71 are averaged over the entire trapping grid and may underrepresent the density in the undisturbed area. It may be best to double these figures as an approximation of the density found in the shrub portion of the trapping grid. This area will be trapped again in August 1975, to assess changes that may take place as the plowed area becomes vegetated.

Lagomorphs

Introduction

Blacktail jackrabbits (*Lepus californicus*) are the only lagomorph considered abundant enough to be censused on the Curlew Valley site. Drag censuses of this species have been conducted each October since 1971 on the south shrub site (A3UBJI1).

Methods

Methods used to census jackrabbits are those described in Balph et al. (1973).

Results

Only the south shrub site was censused in 1974. Table 82 shows density, biomass and the changes in each since the 1973 sample. Figure 53 illustrates the changes in jackrabbit density and biomass since October 1971.

Jackrabbit populations continued to decline in 1974. The low density found on the south shrub site reflects the situation throughout Curlew Valley (L. C. Stoddart, pers. comm.). Possible factors responsible for the decline were discussed in Balph et al. (1973)

#74-1

D.F. Balph et al

D. VERTEBRATES

R. Anderson

D.1. Reptiles and Amphibians

A decision was made not to sample reptiles and amphibians since so few are found on the sites.

D.2. Birds

We had planned to continue to conduct periodic bird censuses using the Emlen (1971) line transect method. Unfortunately these plans failed to materialize and no transects were run.

A subjective evaluation of the bird population on the southern site, however, indicates that the same patterns observed in previous years (Balph et al., 1973) held true in 1973. Horned larks were definitely the most abundant bird on the validation sites, though sage thrashers, sage and brewers sparrows, and mourning doves were also present.

A number of horned larks and one sage thrasher were collected inadvertently during the rodent snap trapping program conducted in May and June. A total of 25 horned larks were collected from the ANNUALS and HAL-ART vegetation types. Only one bird was captured in the ART-ATR-SIT vegetation type though sampling intensity was the same.

Traps had been baited with either rolled oats or Quaker Oats, using Gerbers Baby Cereal as a binder. The baby cereal was mixed with water to a fairly thick consistency, then placed in a plastic squeeze bottle. A small amount was applied to the treadle of a Museum Special snap trap and the inverted trap then pressed into a container of the bait. The cereal acted as an excellent adhesive for the grain bait and greatly eliminated problems of wind-caused bait loss. No bait preference was shown by the horned larks.

This may be a useful technique for measuring relative abundance and feeding distribution of granivorous birds. All birds collected have been saved; examination of crop and stomach contents may provide valuable information as to horned lark food habits.

D.3. Rodents

Introduction

A live-trapping program started in August, 1971, for the estimation of rodent density and biomass was continued in 1973. The sampling schedule was intensified, however, to allow for samples in April, June and August in each of the three vegetation types on the south shrub site. The sampling schedule on both northern sites and the south grass site remained the same as in 1972 (A3UBJH1-4).

Methods

The methods used were essentially those used since 1971 and described in Balph et al., 1973. Certain changes were made for logistical reasons during the April and June samples on the south shrub site. Single traps only were used at each station in the 12 x 12 grid during these samples. This allowed all three grids to be installed and remain in place during the summer. The original two traps per station design was reverted to for the sake of consistency during the August sample.

The use of numbered ear tags as a means of marking animals was tried experimentally during the April and June samples. All animals captured were marked both by toe clipping and by attaching National Band and Tag Company #1 self piercing tags.

Biomass estimates for 1973 are based upon the mean weight calculated for each species in all samples, rather than on a mean weight per sample. Previous biomass figures have been recalculated on this basis for presentation in Figure 1 and in the tables showing changes since 1972.

A snap-trapping program was conducted in off-site areas during the summer of 1973. Each of the major vegetation types represented on the south shrub site were sampled. All animals collected were preserved for later study. Eyeballs were removed at the time of capture and stored in 10% Formalin for 10 days to two weeks. Lenses were then removed and dried at 80 C, after which they were weighed. Stomachs and reproductive tracts were also removed and stored in 10% Formalin. Stomach contents were eventually washed, dried and are now preserved as dry material.

Results

A list of all rodent species observed on the sites to date and their codes is found in Table 1. The results are presented for each site in Tables 2-34. The six-letter species code used in the collection of data is used in all tables for brevity.

The apparent discrepancy in number of animals between the sex and age ratio tables and the other tables for a sample is due to the fact that sex and age data are not available for all individuals because of escapes, etc. The sex and age ratios include only those animals for which these data are available.

Most home range estimates combine the Jennrich and Turner (1969) and regression methods as described in Balph et al., 1973. In those cases where home range estimation was not possible using these methods the area sampled was based on the arbitrary expansion of the grid by the intertrap distance. These cases are indicated by an asterisk in the Pooled Home Range column.

Changes in estimated density of *Peromyscus maniculatus* and *Perognathus parvus* on all sites from 1971-1973 are shown in Figures 1 and 2, respectively. Figure 3 shows the changes in estimated total rodent biomass on all sites during these same years.

Changes that occurred from April to August, 1973, in species composition and density in the three vegetation types on the south shrub are shown in Figures 4-6. These present the results of the periodic sampling conducted during 1973. Although an increase in density of each species would be expected as animals were added to the population through reproduction, this was not necessarily the case. An increase was shown in some species, but in others an apparent decrease was seen, particularly from June to August. The erratic nature of these results is probably due to sampling error and may not reflect the true trend of the population.

All estimates based upon trapping data are necessarily biased due to the failure of certain assumptions that must be made. Certain species in Curlew Valley, for instance, fail to meet the assumption that all individuals are equally catchable; this was demonstrated during the 1972 research (Balph et al., 1973). In many cases, estimates based on trapping data probably underestimate the true density of the population. This must be kept in mind when evaluating density and biomass estimates or when attempting to compare results between areas or times of the year.

In Figure 6, there is an apparent increase in density of *Peromyscus maniculatus* in hectare 72 (ANNUALS) on the south shrub site. This is correlated with an apparent decrease in *Peromyscus* density in hectares 15 (ART-ATR-SIT) and 75 (HAL-ART). A possible explanation is that it indicates a movement of these animals into the ANNUALS vegetation type where seeds were becoming available as a food source.

Examination of Figures 1-6 indicates that each area sampled seems to fluctuate independently in terms of density and biomass. Even closely adjacent areas do not conform to any pattern of temporal change. This is particularly evident if Figures 4-6 are compared with their August, 1972, counterpart (Figure 9, Balph et al., 1973). Some independence between different vegetation types would be expected, but even on the south grass site, a uniform vegetation type, there are signs of independence. Whether these are real or are due to sampling error alone is not known. These results serve to exemplify the problems involved in studying animal populations with trapping programs and attempting to extrapolate from the results.

The experimental use of numbered ear tags was not successful. They proved to be rather difficult to attach, and were easily lost by the animals. Toe clipping alone will be used in all future work in Curlew Valley.

The frequency distribution of eye lens weights for *Peromyscus maniculatus* and *Perognathus parvus* is shown in Figure 7. Because of the small sample size obtained in any one sampling period these curves are based on the pooled data for all samples. The curve for *Perognathus* shows very few young animals in the population; this is most likely because of the late breeding of this species. Young do not appear in the live-trapping samples until August (see the sex and age structure tables).

D.4. Lagomorphs

Introduction

Blacktail jackrabbits (*Lepus californicus*) are the only lagomorph considered abundant enough to be censused on the Curlew Valley sites. Drive-censuses of this species have been conducted each October since 1971 on the south shrub site (A3UBJI1).

Methods

Methods used to census jackrabbits are those described in Balph et al., 1973.

Results

Only the south shrub site was censused in 1973. Table 35 shows density, biomass and the changes in each since the 1972 sample. Figure 8 illustrates the changes in jackrabbit density and biomass since October, 1971.

Jackrabbit populations continued to decline in 1973. The low density found on the south shrub site reflects the situation throughout Curlew Valley (L.C. Stoddart, personal communication). Possible factors responsible for the decline were discussed in Balph et al., 1973.

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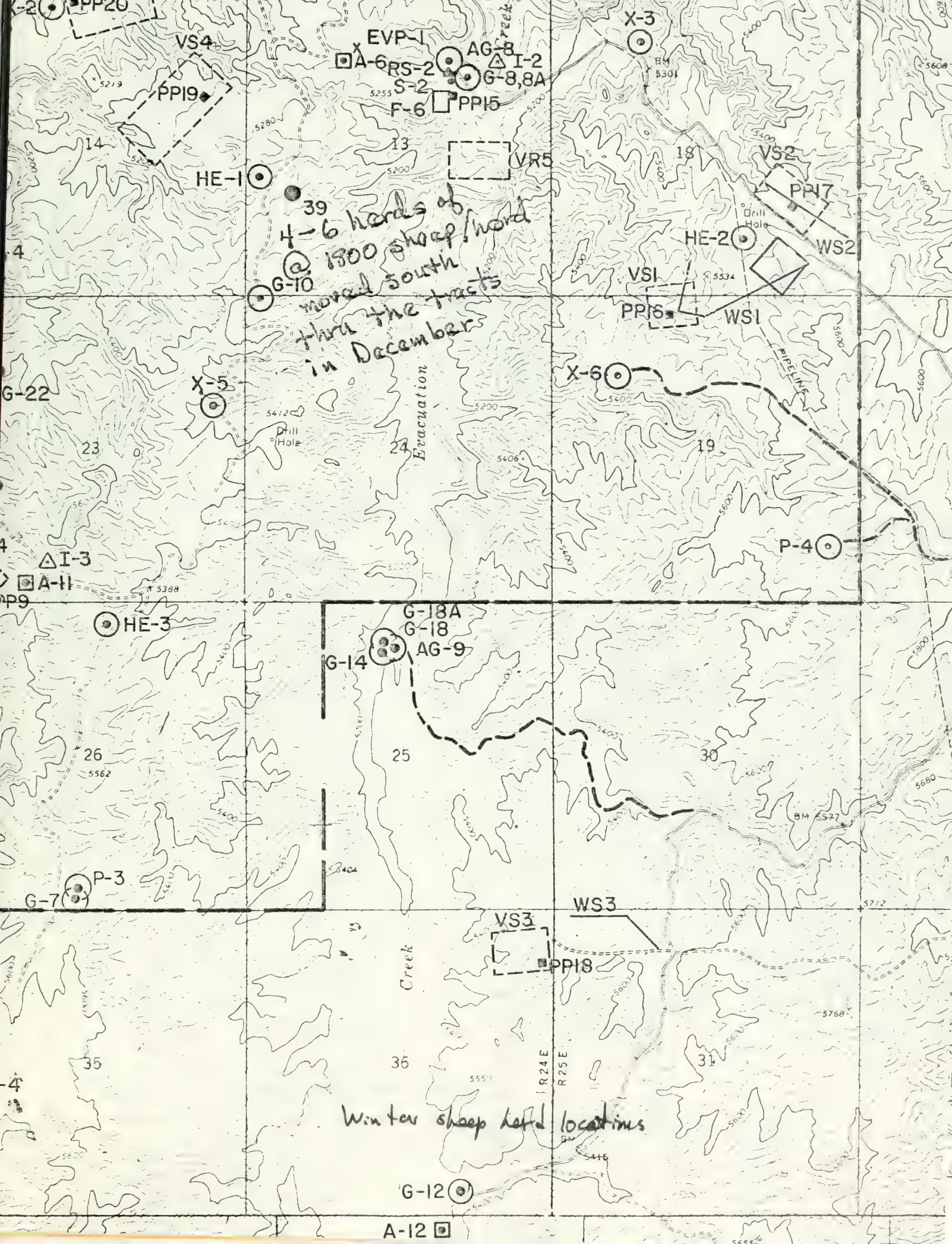
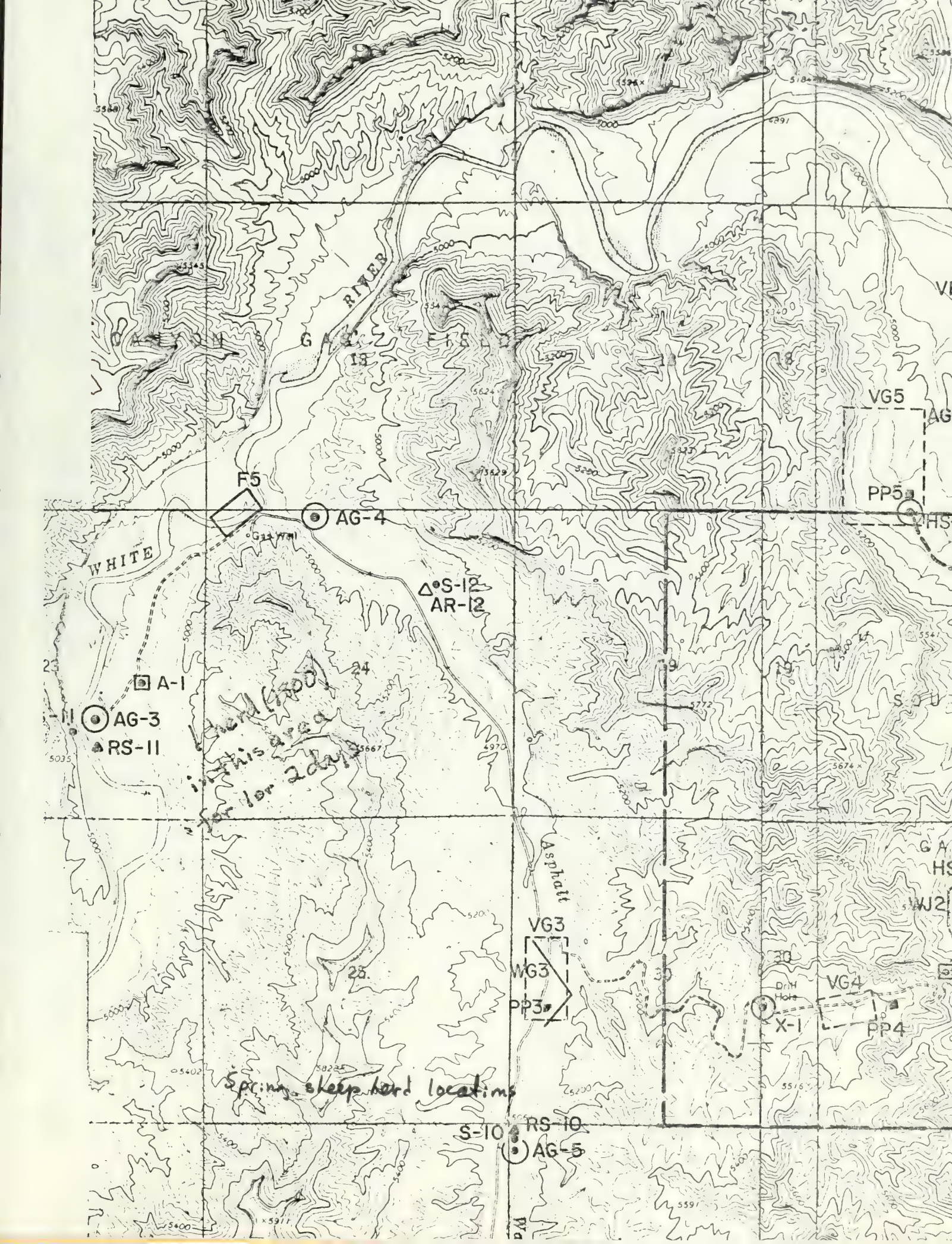
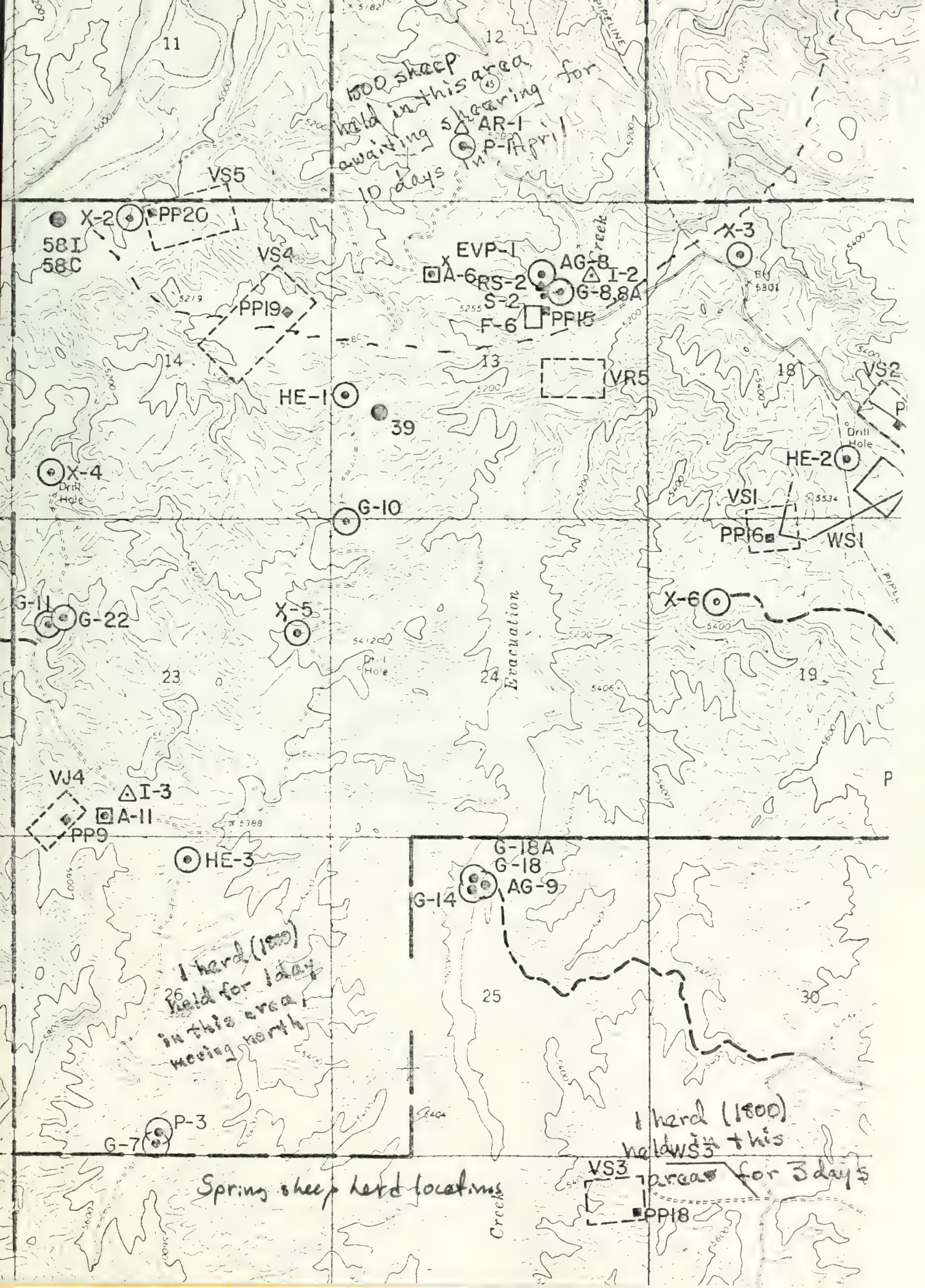
VR1
PP11
AG-2
WR2
A-10
RS-13
S-13
VG5
AG-6
PP12
VR2
WR1
PP13
VR3
RIVER
PP5
HS-4
P-2
G-1
G-1A
G-2A
G-2
SOUTHMAN
CANYON
55R
1800 Sheep from Dec 7 to Feb 19.
Throughout Southern Canyon
VJ2
GAP
HS-3
G-3A
G-3
FIELD
G-21
A-2
PP7
EVP-2
PP2
WG2
VG2
A-9
VG4
X-1
PP4
X-11
VJ1
PP5
G-4A
G-4
G-15
WJ1
X-10
VJ3
PP8
AG-7
WJ3
Drill Hole
TRAIL
Winter sheep herd locations

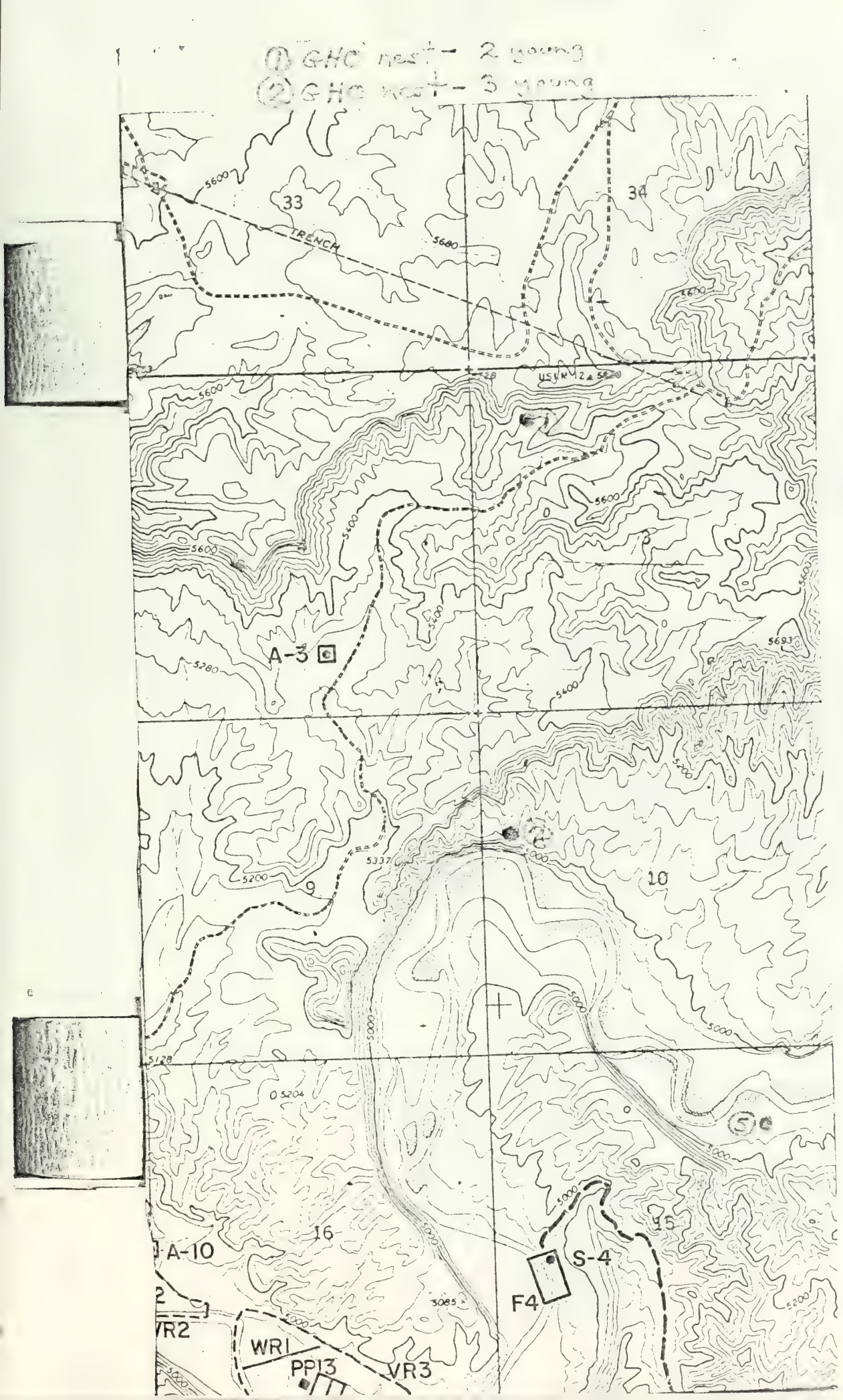

X-2
PP20
VS4
PPI9
EVP-1
A-6
RS-2
AG-8
I-2
G-8,8A
S-2
F-6
PPI5
X-3
BM 5301
VR5
HE-1
39
4-6 herds of
@ 1300 sheep/herd
G-10
moved South
thru the tracts
in December
VS2
PPI7
Drill Hole
HE-2
WS2
VSI
PPI6
WSI
PIPELINE
X-5
Evacuation
X-6
G-22
Drill Hole
P-4
I-3
A-11
HE-3
G-18A
G-18
AG-9
G-14
P-3
G-7
WS3
VS3
PPI8
Creek
R24E
R25E
Winter sheep herd locations
G-12
A-12


RIVER
WHITE
F5
AG-4
VG5
PP5
S-12
AR-12
A-1
AG-3
RS-11
Hard (spot) in this area for 1 or 2 days
Asphalt
VG3
WG3
PP3
VG4
PP4
X-1
Drill Hole
Spring - keep hard locations
S-10
RS-10
AG-5


11
12
1000 sheep held in this area awaiting shearing for 10 days
AR-1
P-1
VS5
X-2
PP20
58I
58C
VS4
PP19
EVP-1
A-6
RS-2
S-2
F-6
PP15
AG-8
I-2
G-8,8A
X-3
14
13
VR5
HE-1
39
18
VS2
P
Drill Hole
HE-2
X-4
Drill Hole
G-10
VS1
PP16
WS1
G-11
G-22
X-5
Drill Hole
Evacuation
X-6
23
24
19
VJ4
I-3
A-11
PP9
HE-3
G-18A
G-18
AG-9
G-14
1 herd (1800) held for 1 day in this area moving north
26
25
30
P-3
G-7
1 herd (1800) holds in this area for 3 days
VS3
PP18
Spring sheep herd locations
Creek

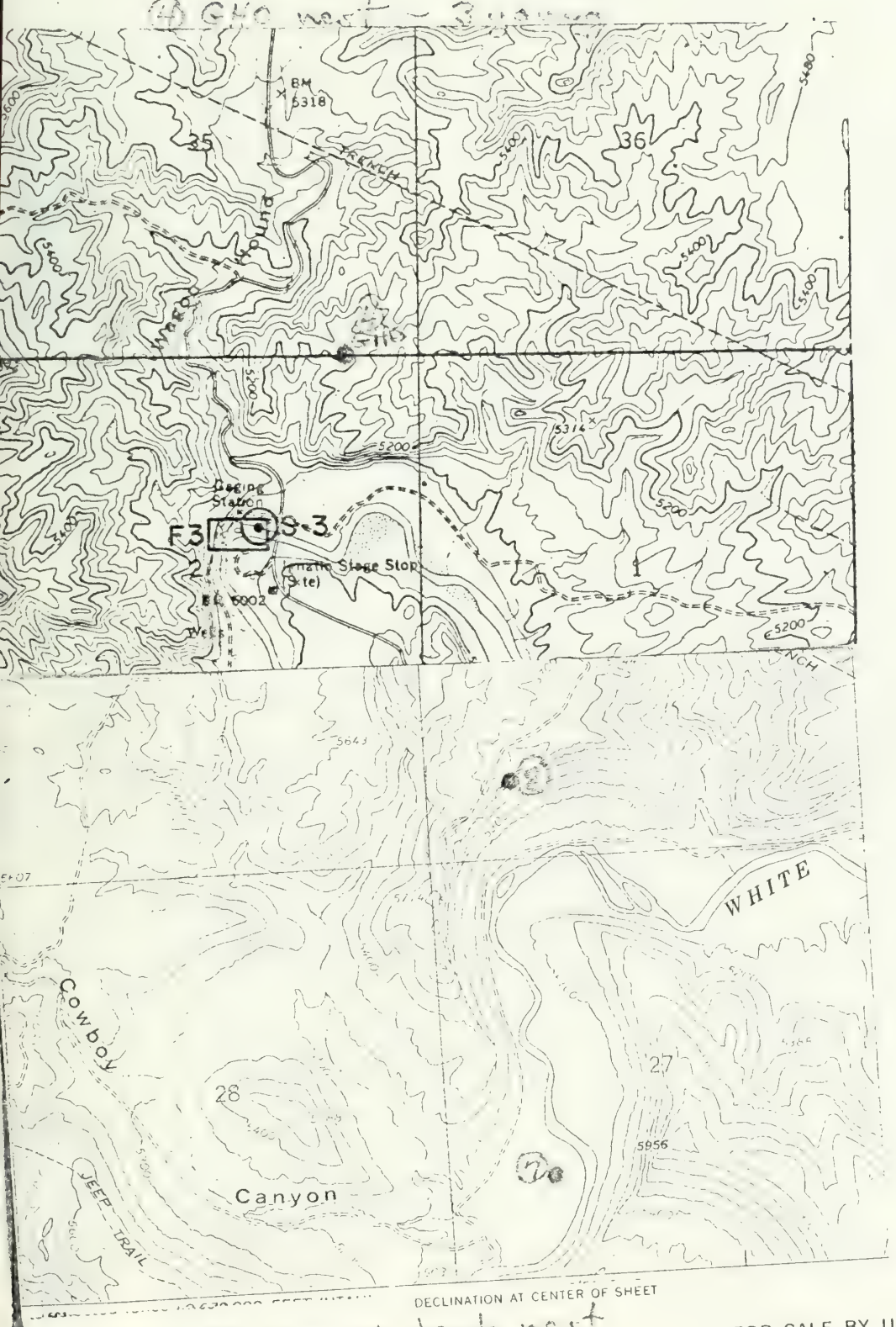
ACTIVE RAPTOR NEST SITES

	Species	Location	Young
(8)	Golden Eagle	Cowboy Canyon (cliff)	unknown
(7)	Cooper's Hawk	Cowboy Canyon (cottonwood)	unknown
(4)	Great Horned Owl	1/4 mile NE of Ignacio (cliff)	3
(1)	Great Horned Owl	3/4 mile of A-3 (cliff)	2
(2)	Great Horned Owl	1 mile N of S-4 (cliff)	3
(3)	Great Horned Owl	3/4 mile NW of S-13 (cliff)	2
(5)	Cooper's Hawk	1/2 mile WSW of X-2 (cottonwood)	unknown
(6)	Golden Eagle	3/4 mile NE of FS (cliff)	1
	Red-tailed Hawk	1 mile S of gas well in C. Fork Ashpalt (cliff)	1


① GHC nest - 2 young
② GHC nest - 3 young
33
34
TRENCH
5600
5680
5400
5200
5337
5693
5280
A-3
9
10
16
15
A-10
S-4
F4
VR2
WR1
PP13
VR3
5085
5000
5204
5128

S-11
A-1
WHITE
F5
RIVER
S-12
6 Golden eagle nest - young

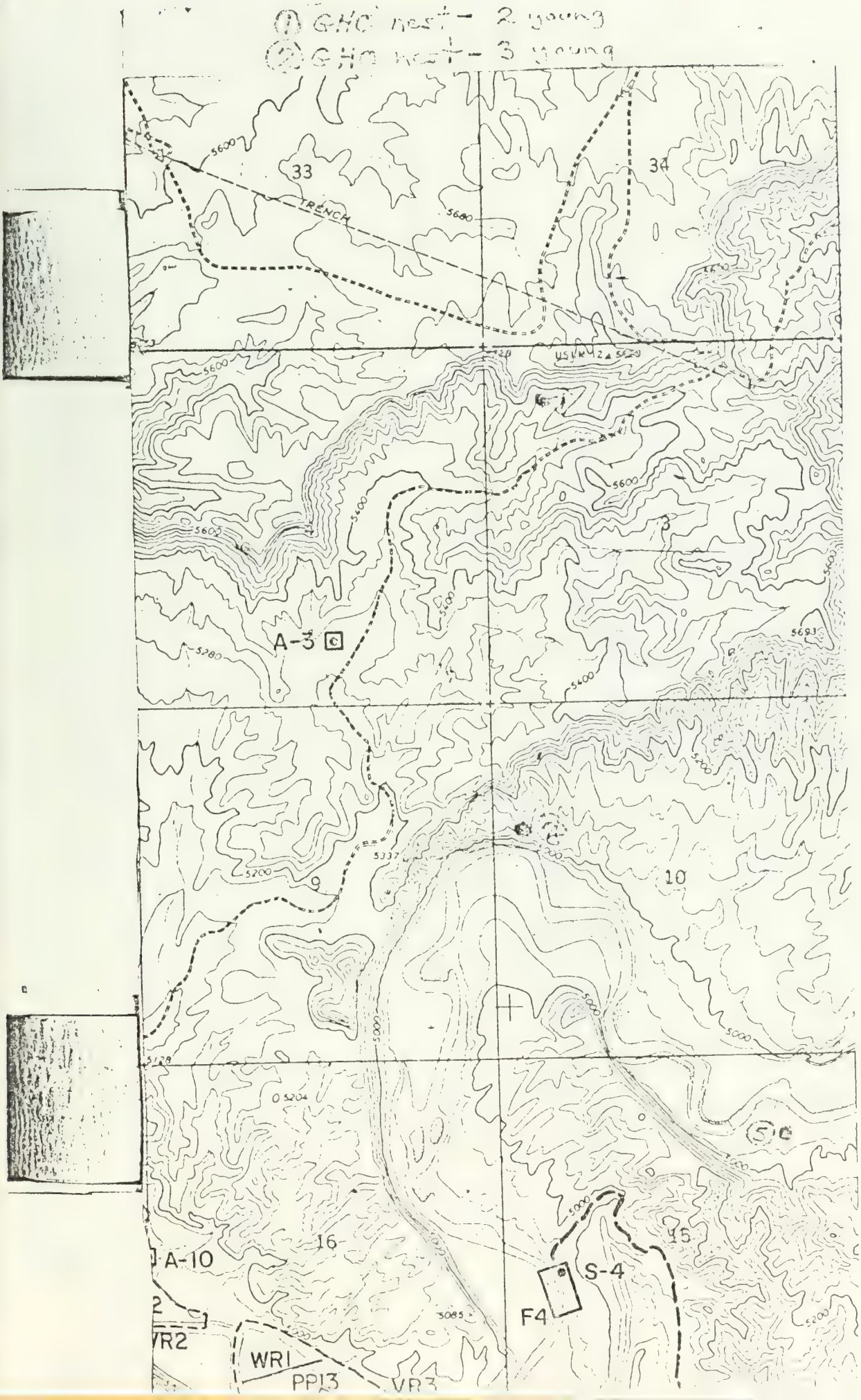
VR1
PP1
WHITE
WR2
S-13
VG5
PP5



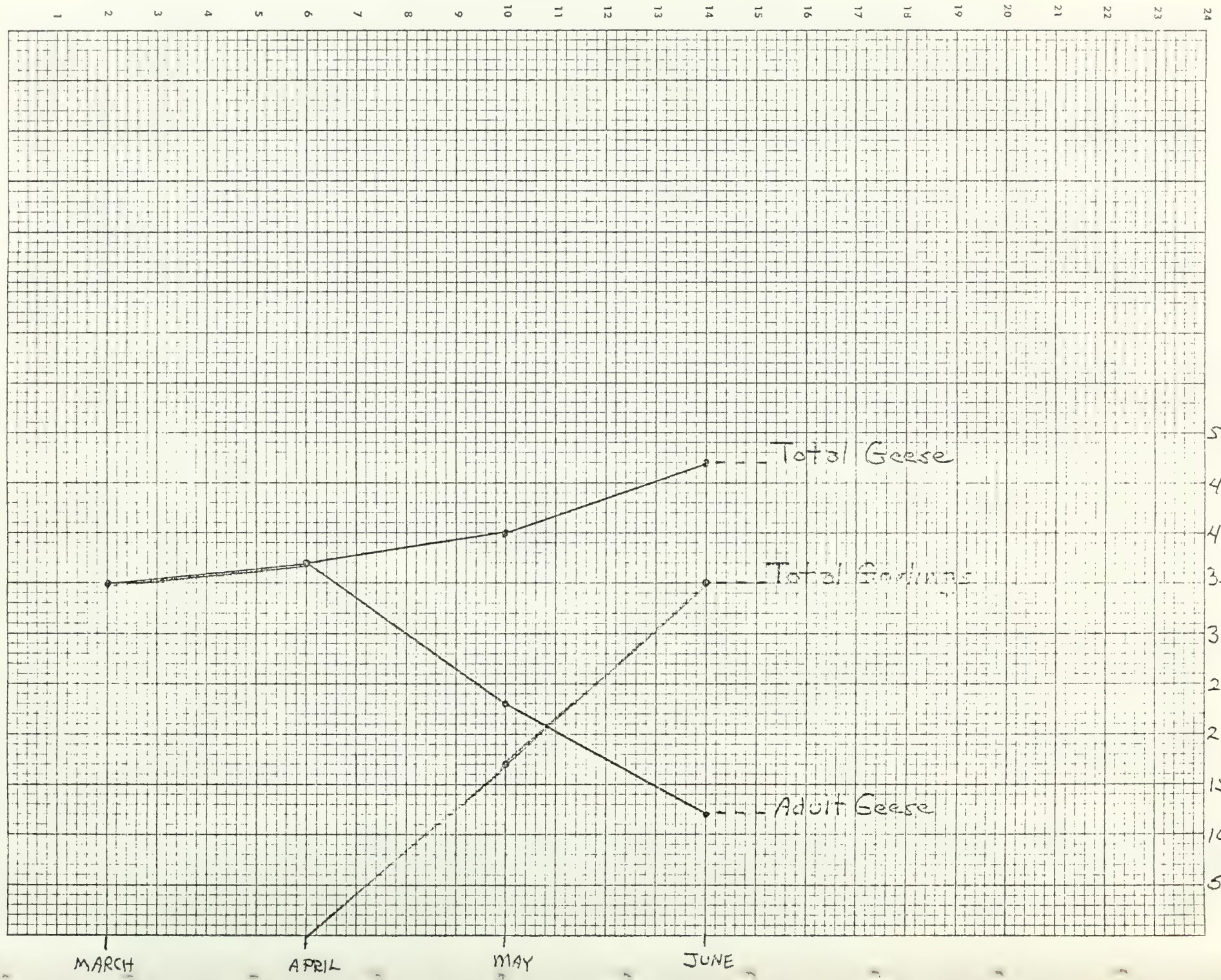
(7) Cooper's hawk nest

(8) Golden eagle nest

FOR SALE BY U
A FOLI


① GHO nest + - 2 young
② GHO nest + - 3 young
33
34
TRENCH
A-3
9
10
A-10
16
15
S-4
F4
WR1
PP13
VR2
VR3

Canada Goose Population Data.

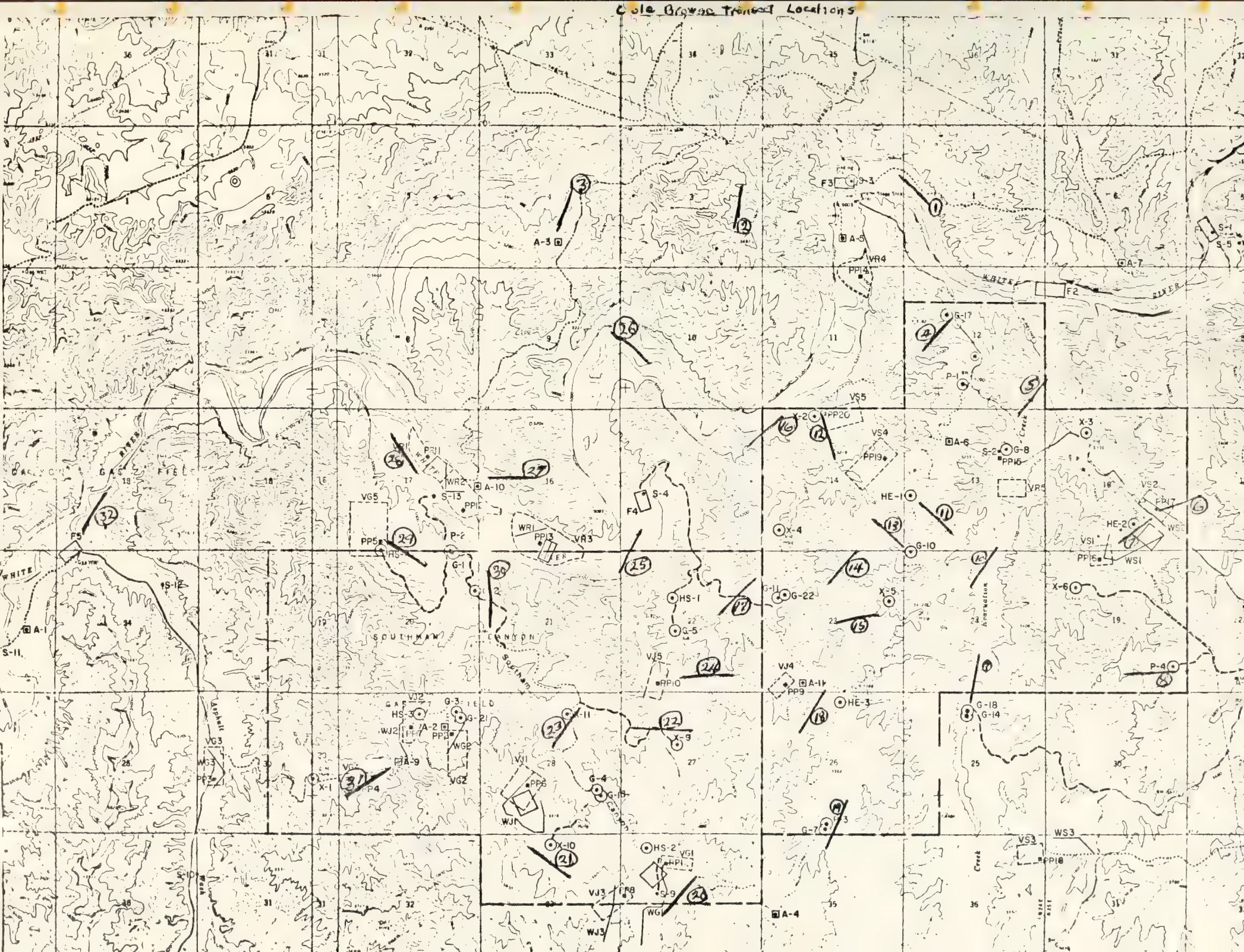


Cole Transect Locations

1. Ignacio riparian
2. Ignacio uplands
3. A-3
4. G-17
5. Pipeline crossing
6. PP 17
7. HE-2
8. D-4
9. G-18
10. Evacuation riparian
11. HE-1
12. PP 20
13. G-10
14. N. Sec. 23
15. X-5
16. X-2 riparian
17. G-11
18. A-11
19. D-3
20. S-9
21. X-10
22. X-9
23. X-11
24. PP-10
25. F-4
26.
27. A-10

(28) VR-1
(29) PP-5
(30) G-2
(31) PP-4
(32) F-5

Cole Browse Transect Locations



B. AQUATIC BIOLOGY

F-1 Plankton collected III-17-76
Checked III-22-76

α 3 64 ml

Strip	Count
1	45
2	39
3	65
4	39

$\frac{178 \times 5 \times 64}{2200} \simeq 25.9$ cells/ml

α 1 68 ml

Strip	Count
1	44
2	64
3	21
4	37

$\frac{166 \times 5 \times 88}{2200} \simeq 33.2$ cells/ml

α 2 55 ml

Strip	Count
1	87
2	65
3	70
4	70

$\frac{292 \times 5 \times 55}{2200} \simeq 36.5$ cells/ml

$\bar{x} \simeq 31.9$

A abundant
Gymnodinium
Diatoms
Cymatopleura
Synedra (rare)
Epithemia
Rhopalodia rare

Calculation

Coffee Lab III-21-76
Checked III-21-76

x2 50 ml

Dilution	Count
1	44
2	19
3	9
	5

$\frac{77 \times 5 \times 5}{2} = 14$ cells/ml

Too much dilution

x1 100 ml

Dilution	Count
1	54
2	34
3	31
	39

$\frac{158 \times 5 \times 100}{200} = 389$ cells/ml

x3 120 ml

Dilution	Count
1	81
2	49
3	44
4	53

$\frac{227 \times 5 \times 120}{200} = 681$ cells/ml

$\bar{x} \sim 37.3$

Plankton

K-3 X 1 Collected III-K-76

Examined III-21-76

2200 ml/sec pli - concentrated to 74 ml.

Sp.	Count (cell = 1)	Major genera
1	34	Thalassiosira
2	27	
3	24	Cyclotella
4	35	
	120	Melosira

$\frac{120 \times 5 \times 74}{2200} \approx 20$ cells/ml

Navicula

K 2

Sp.	Count
1	35
2	31
3	24
4	27
	117

Coscinodiscus

Nitzschia

Synedra sp.

Pleurosigma

Amphora

Gladiofera

$117 \times 1 \times 80 \div 2 = 13$ cells/ml

$\bar{x} = 24$ cells/ml

K3 Sp.

Sp.	Count
1	47
2	46
3	46
4	33
	167

$167 \times 1 \times 80 \div 500 = 53.4$ cells/ml

$\bar{x} \approx 24$

F-1 Plankton Collected III-17-76
Sliced III-20-76

Coll #1 80 ml

Strip (50 mm²)	Count
1	26
2	15
3	11
4	12

$\frac{64 \times 5 \times 80}{3200} = 11.6$ cells/ml

Lauderia
Nitzschia
Fragillaria

Oscillatoria
Pleurosigma
Epithemia
Cyclotella
Navicula
unid. green uni-cell
Synedra

X2 70 ml

Strip	Count
1	22
2	24
3	25
4	21

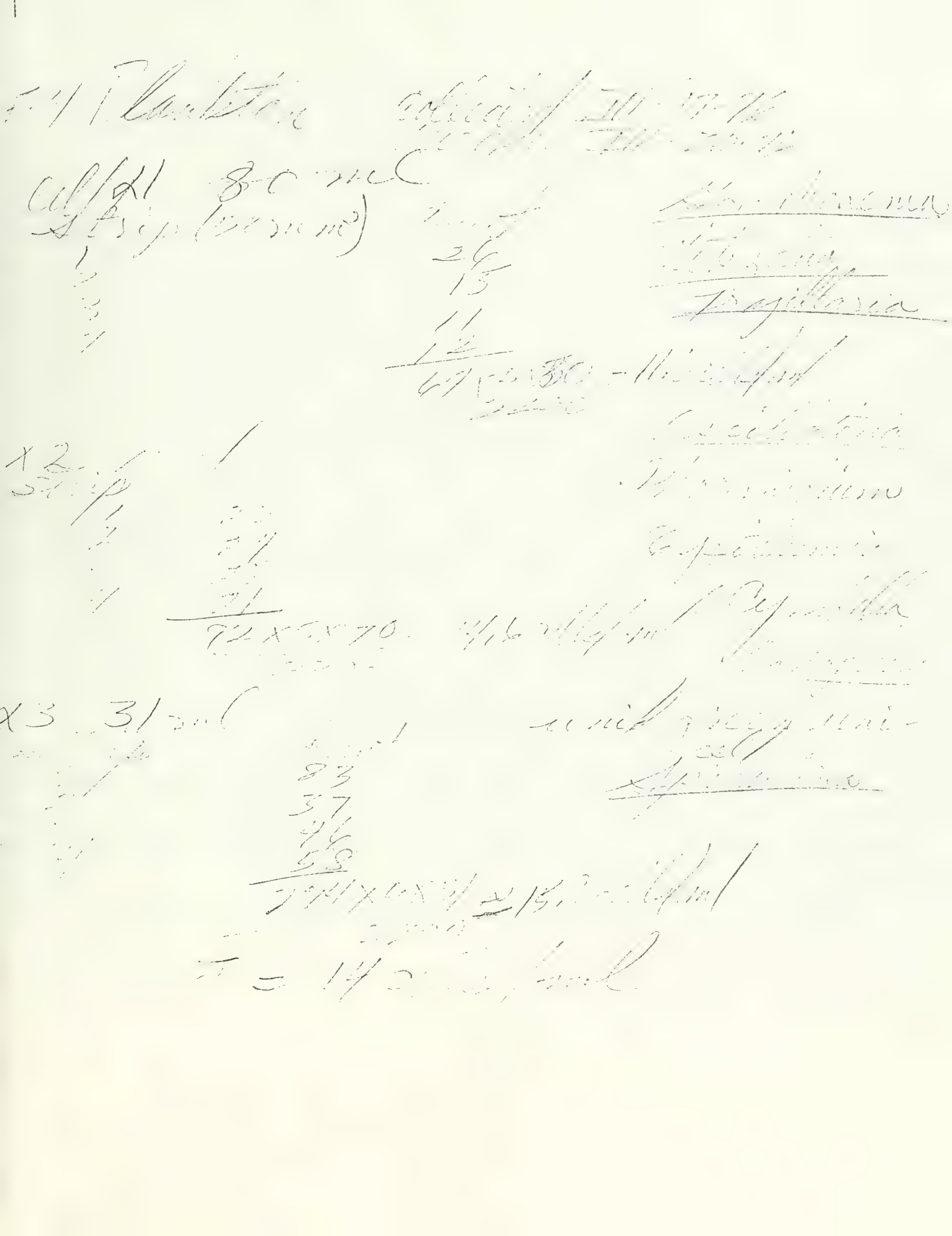
$\frac{92 \times 5 \times 70}{3200} = 14.4$ cells/ml

X3 31 ml

Strip	Count
1	83
2	37
3	46
4	58

$\frac{224 \times 5 \times 31}{3200} \simeq 15.5$ cells/ml

$\bar{x} = 14$ cells/ml



#6 Plankton
Collected 11-21-76
Checked 11-21-76

#1 80 ml

Strip	Count
1	3
2	7
3	4
4	7

$\frac{21 \times 5 \times 80}{100} = 3.8$ cells/ml

#2 68 ml

Strip	Count
1	5
2	4
3	12
4	3

$\frac{24 \times 5 \times 68}{100} = 3.7$ cells/ml

Algal abundance quite low both qual & quantitatively - sample: Algae thick on puddles and sprinkler legs near track.

Plankton Stats

III - 16

x_i	x_i^2
31.9	1017.6
37.3	1391.29
24	576
14	196
107.2	3180.89

$\bar{x} = 26.8$

$107.2^2 = 11491.84$

$s^2 = \dfrac{3180 - \frac{11491.84}{4}}{3} = \dfrac{2873.25}{3} = \dfrac{306.75}{3}$

$s^2 = 102.25$

$s = 10.11$

$s_{\bar{x}} = 5.05$

$t = 1.638$

$\bar{x} \pm (t)(s_{\bar{x}}) = 26.8 \pm 8.27$

$28 - 35 \pm$

$n = \dfrac{t^2 s^2}{\ell^2} = \dfrac{(2.683)(102.25)}{(26.8 \times 0.1)^2}$

$= \dfrac{274.3}{71.6} = 3.8$

7.18

$n = \dfrac{274.3}{(26.8 \times x)^2} = \dfrac{274.3}{718.24x^2}$

$n(718.24x^2) = 274.3$

$\dfrac{n}{n} = \dfrac{22.86}{718.24}$

$x^2 = 0.032$ $\quad x = 0.178$

White River periphyton - qualitative observations - Collections from stones and submerged objects @ several locations.

Phormidium sp.: a short filamented crust abundant on stones.

Cladophora glomerata: common in isolated clumps on shallow stones

Epithemia sorex
Navicula (tripunctata ?) } appear to be co-dominant diatoms.
Navicula (cryptocephala ?)
Surirella
Gomphonema olivaceum
Cocconeis placentula } common

Stigonaloda - Rare
Nitzschia common
Spirulina subsalsa common
Diatoma hiemale
Spirogyra

III-76 cont.

Periphyton - Pz

Anabena sp

Cymbella

Nitzschia sigmoidea } infrequent

Enemoneis sp - rare

Achroderia rare

Synedra sp. infreq.

Engineering statistics III-76

	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
x_1	120	-57	3249
x_2	407	230	52900
x_3	116	-61	3721
x_4	115	-62	3844
x_5	127	-50	2500
Σx	885		$\Sigma(x_i - \bar{x})^2 = 66214$

$\bar{x} = 177$

$$s^2 = \frac{\sum x_i^2 - \frac{(\sum x_i)^2}{n}}{n-1} = \frac{31329 - \frac{66214}{5}}{4} = 4521$$

$s^2 = 4521$

$s = 67.2$

$$s_{\bar{x}} = \sqrt{\frac{s^2}{n}} = 30$$

$t_2 \ (N=5) = 1.533$

$\bar{x} \pm (t)(s_{\bar{x}}) = 177 \pm 46$

Samples required for 90% accuracy

$$n = \frac{t^2 s^2}{(177 \times 0.1)^2} \quad n = \frac{10624}{17.7^2} \quad n = 33.9$$

33 Samples required for accuracy of mean @ 90%

~~Error~~ ~~accuracy~~ of mean $= \frac{t^2 s^2}{(177x)^2} = \frac{(2.35)(4521)}{31329x^2} = \frac{10624}{31329x^2}$

$s = \frac{10624}{31329x^2}$ ~~$= 31329x^2$~~

$5 \ 31329x^2 = \frac{10624}{5}$

$31329x^2 = \frac{2124.8}{31329} = 0.068$

$\sqrt{x^2} = \sqrt{0.068} \quad x = 0.26$

Drainage Composite
Immediately below Bridge

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. composite-1-10 Sampling Method Ekman Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		B.	~~TRI~~caudatus (?)	1	
		Callibaetis			
		Ephemerella	~~[illegible]~~ INERMIS	3	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
		AMETROPOS	albrightii	1	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	2	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
		CAPNIIDAE CAPNIA	VERNALIS	2	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	~~Ceratopogonidae~~				
	Simuliidae				
	~~Culicidae~~				
	Chironomidae	*Stichtochironomus*	sp	7	
		Chironomus	sp.	24	
		Parachironomus	sp	1	
	~~Ceratopogonidae~~	*Paratendipes*	sp	2	
		Diamesia	sp	17	
		Orthocladius	sp	13	
	Empididae			5	
	Ceratopogonidae	*Palpomyia?*	sp	30	
	Tipulidae	*Hexatoma?*	sp	3	
		Limnodrilus	*Hoffmeisteri*	9	
			TOTAL	120	

Biologist [signature] Total Number of Taxa 15

Composite

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-3 Sample No. Composite Sampling Method D-Frame Collection Date 11-17-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		B.	TRICAUDATUS (?)	1	
		Callibaetis			
		Ephemerella	~~[illegible]~~ INERMIS	3	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
			albrightii	1	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	2	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
		CAPNIIDAE CAPNIA	VERNALIS	2	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	~~Ceratopogonidae~~				
	Simuliidae				
	~~Culicidae~~	*Stichtochironomus*	SP	7	
	Chironomidae	CHIRONOMUS	SP	24	
		PARACHIRONOMUS	SP	1	
	~~Ceratopogonidae~~	PARATENDIPES	SP	2	
		DIAMESIA	SP	17	
		ORTHOCLADIUS	SP	13	
	Empididae			5	
	Ceratopogonidae	*Palpomyia*?	SP	30	
	Tipulidae	*HEXATOMA*?	SP	3	
		Limnodrilus	CLAPAREDIANUS	9	
			TOTAL	120	

Biologist [signature] Total Number of Taxa 17

/10 Sample composite
2.5 ft.²

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. Composite 1-10 Sampling Method EKMAN Collection Date III-13-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	sp	7	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	3	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	CHIRONOMUS	sp	352	
		Orthocladius?	sp	13	
	Ceratopogonidae	Palpomyia?	sp	1	
	Empididae			4	
	Tipulidae	HEXATOMA?	sp.	4	
		Limnodrilus	CLAPAREDIANUS II		
			TOTAL	407	

Biologist [signature] Total Number of Taxa 7

110 Sample Composite
2.5 ft²

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1017-17

Station No. E-2 Sample No. Composite 1-10 Sampling Method Kick Collection Date 10-13-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	sp	4	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	3	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	Orthocladius?	sp	358	
		Diplocladius?	sp	13	
	Ceratopogonidae	Palpomyia?	sp	1	
	Empididae			2	
	Tipulidae				
		Hexatoma	sp	4	
		Antocha	Clapercrombie II		
			TOTAL	427	

Biologist _____ Total Number of Taxa 7

10 Sample composite
3.5 ft²

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-L Sample No. composite of 10 samples Sampling Method Surber Collection Date 10-12-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	sp	1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	Chironomus	sp.	79	
		orthocladius	sp.	3	
	Ceratopogonidae	Palpomyia (?)	sp	7	
		Immature Chironomids		27	

TOTAL 116

Biologist Clay Total Number of Taxa 5

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. Composite 1-10 Sampling Method Ekman Collection Date III-17-75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*		1
		Rhithrogena	*undulata*		
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*			
	Trichorythidae	*Trichorythodes*			
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		36
	Leptophlebiidae	*Traverella*	*albertana*		27
					43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
	Capniidae	*Arcynopteryx*			
		CAPNIA	SPA	7	
	Perlidae	*Taeniopteryx*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	~~Culicidae~~	CHRONOMUS	SPA	3	
	Chironomidae	CHIRONOMUS	(TRIPARIUS?)	42	
		STICHTOCHIRONOMUS	SP	5	
	~~Ceratopogonidae~~	DIAMESA?	SP	6	
		ORTHOCLADIUS?	SP	5	
	CERATOPOGONIDAE	PALPOMYIA	SP	4	
		LIMNODRILUS	CLAPAREDIANUS	46	
			TOTAL	115	

Biologist _____ Total Number of Taxa 8

10 sample composite near left bank of reddy eddy near bend by gas well.

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-5 Sample No. 1-10 Sampling Method Ekman Collection Date 11-19-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	2	1
		Rhithrogena	*undulata*		
	Baetidae	*Baetis*			6
		Pseudocloeon	*turbidum*		15
		Dactylobaetis	*cepheus*		
	Ephemerellidae	*Ephemerella*			
	Trichorythidae	*Trichorythodes*		1	
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*		36
	Leptophlebiidae	*Trauerella*	*albertana*		27
					43
		Ophiogomphus	*severus*		45
				3	
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	~~Simuliidae~~	DIAMESIA		13	
	~~Gulicidae~~	CRYPTOCHIRONOMUS	SP	4	
	Chironomidae	STICHTOCHIRONOMUS	SP	11	
		CHIRONOMUS	SP	44	
		ORTHOCLADIUS	SP	9	
	Ceratopogonidae				
	TIPULIDAE				
	EMPIDIDAE	HEXATOMA ?	SP	2	
				5	
		LIMNODRILUS	CLAPAREDIANUS	37	
			TOTAL	127	

Biologist C Ray Total Number of Taxa 13

Surber Samples - White River III-76

x_i	x_i^2	
155	24025	
55	3025	
211	44521	
94	8836	81632
35	1225	
25	625	
2	4	
11	121	
1	1	767
4	16	
84	7056	
49	2401	
45	2025	
97	9409	29141
94	8836	
14	196	
44	1936	
7	49	
2	4	2210
5	25	
23	529	
25	625	
22	484	
5	25	2954
36	1296	
$\Sigma 1145$	$(\Sigma x)^2 = 117295$	

$$S^2 = 117295 - \frac{1311025}{25} \quad 52441$$

$$24$$

$$S^2 = 2702$$

$$S \cong 52$$

$$S_{\bar{x}} \cong 10.4 \pm$$

$$t = 1.318$$

$$\bar{x} \pm (t)(S_{\bar{x}}) \cong 46 \pm 14$$

$$25 = \frac{t^2 s^2}{L^2} = \frac{(1.74)(2702)}{(46x)^2} = 4693.$$

$$25 = \frac{4693.7}{2116x^2}$$

$$(2116x^2) = \frac{4693.7}{25} = 187.75$$

$$2116x^2 = \frac{187.75}{2116} = 0.09$$

$$x \cong 0.3$$

Error of mean ≅ 30%
(accuracy ≅ 70%)

$\bar{x} = 45.8$
$\pm = 46$

Table II - Species Diversity (d) and Benthic Invertebrates by Shannon Weaver Function. White River Utah, March 1973 Surber Samples.

Station	Sample No.	SDI	N*	Y**
F-1	1	2.41	155	13
	2	3.12	56	13
	3	2.37	211	9
	4	2.39	94	14
	5	1.96	55	7
	Composite	2.93	553	20
F-2	1	2.27	25	7
	2	1.00	2	2
	3	3.10	11	9
	4	0.0	1	1
	5	1.50	4	3
	Composite	3.37	43	14
F-3	1	2.89	84	15
	2	2.13	49	8
	3	3.08	45	13
	4	2.96	97	14
	5	2.49	94	13
	Composite	2.96	368	22
F-4	1	1.46	14	5
	2	1.58	44	6
	3	2.24	7	5
	4	1.00	2	2
	5	2.32	5	5
	Composite	2.46	72	14
F-5	1	2.94	23	9
	2	2.98	25	9
	3	3.54	22	10
	4	1.92	5	4
	5	3.19	36	12
	Composite	3.60	111	16

$\bar{d}$ = average sample = 2.73

* N = Number of invertebrates per ft.² (0.093 m²)

** Y = Number of taxa per sample.

Table II

Benthic Invertebrates by Shannon Weaver Function. White River Utah, March 1976
Surber Samples.

Station	Sample No.	SDI	N**	Y***
F-1	1	2.41	155	13
	2	3.12	56	13
	3	2.37	211	9
	4	2.39	94	14
	5	1.96	55	7
	Composite	2.93	553	20
F-2	1	2.27	25	7
	2	1.00	2	2
	3	3.10	11	9
	4	0.0	1	1
	5	1.50	4	3
	Composite	3.37	43	14
F-3	1	2.89	84	15
	2	2.13	49	8
	3	3.08	45	13
	4	2.96	97	14
	5	2.49	94	13
	Composite	2.96	368	22
F-4	1	1.46	14	5
	2	1.58	44	6
	3	2.24	7	5
	4	1.00	2	2
	5	2.32	5	5
	Composite	2.48	72	14
F-5	1	2.94	23	9
	2	2.98	25	9
	3	3.04	22	10
	4	1.92	5	4
	5	3.19	36	12
	Composite	3.60	111	16

$\bar{d}$ = average sample SDI = 2.77

* d = Number of invertebrates per ft² (0.093 m²)

** Y = Number of taxa per sample.

COMPOSITE

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-1 Sample No. Composite Sampling Method Surber Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	115	236.9803	1
		Rhithrogena	*undulata*	32	48.1648	6
	Baetidae	*Baetis*	*bicaudatus*			15
		~~*Callibaetis*~~ B. Baeti	TRICAUDATUS (?) Sp. A	44	72.3119	
				2	.6021	
		Ephemerella		211	490.4236	
		Trichorythodes	*minutus*	5	3.4949	36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	4	4.6689	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		15	17.6414	
		Arcynopteryx				
	Perlidae	OEmopteryx	Fosketti	4	4.6689	
		Taenionema	*pacifica*			65
		Acroneuria				
		Capnia C.	vernalis Sp. A	3	1.4314	
				4	2.4082	
Trichoptera	Hydropsychidae	*Hydropsyche*		12	12.9502	
		Cheumatopsyche		30	44.3136	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae			3	1.4314	
	~~Culicidae~~	Orthocladius (?)		31	46.2322	
	Chironomidae	Chironomus	Sp. A Sp. B	24	33.1251	
	~~Ceratopogonidae~~	Cricotopus (?)		8	8.5882	
					Σ 1029.4371	
	naididae	Limnodrilus		1		
				1		
			TOTAL	553		

Biologist [signature] Total Number of Taxa 20

$\bar{d} = 2.93$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 1 Sampling Method SURBER Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	n Log$_{10}$ n	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	7	5.9157	1
		Rhithrogena	*undulata*	9	8.5982	6
	Baetidae	*Baetis*	*bicaudatus*	~~55~~ 34	33.1251	15
		~~*Callibaetis*~~		2	.6021	
		Ephemerella		22	149.9125	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		4	2.4082	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*	1	0	65
		Acroneuria		3	1.4314	
		Claassenia	*sabulosa*	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*		15	3.4949	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Cricotopus*	sp.	2	.6021	
		~~*Chironomus*~~	~~sp A~~	17	20.9176	
	Ceratopogonidae				Σ 226.9998	
	Nebridae			1	0	
				TOTAL 155	155 log 155 = 339.5014	

Biologist [signature] Total Number of Taxa 13

$\bar{d} = 2.41$

Note abundance of Baetis (tricaudatus?)

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 2 Sampling Method SURBER Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	0	1
		Rhithrogena	*undulata*	16	16.0458	6
	Baetidae	*Baetis*	*bicaudatus*			15
			B. tricaudatus(?)	8	7.2247	
		Callibaetis				
		Ephemerella	+D12	12	12.9502	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
			Bison ♂	2	.6021	
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		3	.6021	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
	Capniidae	Capnia	C. sp. A	2	0.6021	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		Ceratopsyche		2	0.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae	*Simulium*	sp.	2	0.6021	
	Culicidae					
	Chironomidae	*Orthocladius?*	sp.	6	4.6689	
		Eukiefferiella?	sp.	1	0	
	Ceratopogonidae					
					$\Sigma = 45.3315$	
			TOTAL	50	$\log_{10} 50 = 97.8985$	

Biologist [signature] Total Number of Taxa 13

$d = 3.12$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-1 Sample No. 3 Sampling Method SURBER Collection Date III-22-72

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	N log$_{10}$ N	CODE NO.
Ephemeroptera	Heptageniidae	~~57~~ *Heptagena*	*elegantula* ~~37+5+27~~	57	100.0849	1
					2.4082	
		Rhithrogena	*undulata* ≥ 4	4		6
	Baetidae	*Baetis*	*bicaudatus*			15
			TRICAUDATUS ≥ 3	3	1.4314	
		Callibaetis				
		83 *Ephemerella*	~~+++60~~ ≥ 83	83	159.2835	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	≥ 4	4	~~1.4314~~	
		Arcynopteryx			2.4082	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*	~~8~~ 9	9	8.5882	
		Cheumatopsyche	~~13+6+19~~ 20	~~20~~	26.0206	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Orthocladius?*	*sp* 25	25	34.9485	
		Cricotopus?	*sp* c	6	4.6689	
	Ceratopogonidae			~~2~~	339.8424	
			TOTAL	211	$\log_{10} 211 = 490.4236$	

Biologist _____ Total Number of Taxa 9

$\bar{d} = 2.37$

From Riffle out of main channel.

F-1

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 151717

Station No. ~~F-4~~ Sample No. 4 Sampling Method Surber Collection Date 10-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ~~45~~ 50	50	84.9485	1
		Rhithrogena	*undulata* 1	1	0	6
	Baetidae	*Baetis* B.	*bicaudatus* *tricaudatus* (?) 6	6	4.6689	15
		Callibaetis				
		Ephemerella	~~15~~ 16	16	19.2659	
		Trichorythodes	*minutus* ~~2~~ 5	5	3.4949	36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	2	2	.6021	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
	Capniidae	*Capnia*	*vernalis* 1	1	0	
		C.	*sp. A.* 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*	1	1	0	
		Cheumatopsyche	3	3	1.4314	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae		1	1	0	
	Culicidae					
	Chironomidae	Chironomus	Sp A 5	5	3.4949	
			Sp B 1	1		
	Ceratopogonidae				Σ 117.9066	
	Tubificidae	*Limnodrilus*	*claparedianus* 1	1		
			TOTAL	94	$\log_{10} 94 = 185.4740$	

Biologist _____ Total Number of Taxa 14

$\bar{d} = 2.39$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-1 Sample No. 5 Sampling Method Surber Collection Date 11-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 4	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis	B TRICAUD 3	3	1.4314	
		Ephemerella	21	21	27.7666	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	22	2	.6021	
	Capniidae	Capnia	SP. A 1	1	0	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*	2	2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus	Sp. 2	2	.6021	
	Ceratopogonidae				Σ 33.4125	
			TOTAL	35	$\log_{10} 35 = 54.0424$	

Biologist [signature] Total Number of Taxa 7

$\bar{d} = 1.96$

Composite

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-2 Sample No. Composite Sampling Method Surber Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	1.4314	1
		Rhithrogena	*undulata*	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus*			15
			tricaudatus (?)	2	.6021	
		Callibaetis				
		Ephemerella		9	8.5882	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		3	1.4314	
		Arcynopteryx				
		Oenoptergx		9	8.5882	
	Perlidae	*Taenionema*	*pacifica*	1		65
		Acroneuria				
		Caprica C.	Vernalis Sp. A	1 2	.6021	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		Cheumatopsyche		1/2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus		4	2.4082	
		Orthocladius (?)		1		
	Ceratopogonidae	atherix		1		
					Σ 26.6649	
			TOTAL	43		

Biologist _____ Total Number of Taxa 14

d = 3.37

+1 empty Leptocella case

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. 1 Sampling Method SURBER Collection Date 11-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 3	3	1.4314	1
		Rhithrogena	*undulata* 2	2	.6021	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis	& TRICAUD 1	1	0	
		Ephemerella	8	8	7.2247	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
		OEMOPTERYX	9	9	8.5882	
	Perlidae	*Taenionema*	*pacifica* 1	1	0	65
		Acroneuria				
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus 1		1	0	
	Ceratopogonidae				Σ 17.8464	
			TOTAL	25	$\log_{10} 25 = 34.94485$	

Biologist [signature] Total Number of Taxa 7

$\bar{d} = 2.27$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-2 Sample No. 2 Sampling Method SURBER Collection Date 11-18-76 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	n log n	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		Capnia	*JERNALIS*	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus		1	0	
	Ceratopogonidae					
			TOTAL	2	$\log_{10} 2 = .6021$	

Biologist [signature] Total Number of Taxa 2

$\bar{d} = 1.00$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 3 Sampling Method SURBER Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	w log$_{10}$ n	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 2	2	.6821	6
	Baetidae	*Baetis*	*bicaudatus* TRICAUD /	1	0	15
		Callibaetis				
		Ephemerella	/	1	0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	/	1	0	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria CAPNIA	4 /	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche* CHEUMAT	2	2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus Sp		1	0	
		Orthocladius(?) Sp1		1	0	
	Ceratopogonidae					
		ATHERIX	variegata	1	0	
				11	1.2042	
			TOTAL	11	$\log_{10} 11 = 11.4553$	

Biologist _____ Total Number of Taxa 9

$\bar{d} = 3.10$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 3 Sampling Method SURBER Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$w \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 2	2	.6021	6
	Baetidae	*Baetis*	*bicaudatus* TRICAUD /	1	0	15
		Callibaetis				
		Ephemerella	/	1	0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	/	1	0	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria CAPNIA	A /	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche* CHEVMAT	2	2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus Sp		1	0	
		Orthocladius(?) Sp1		1	0	
	Ceratopogonidae					
		ATHERIX	variegata	1		
					1.2042	
			TOTAL	11	$\log_{10} 11 = 11.4553$	

Biologist _____ Total Number of Taxa 9

$\bar{d} = 3.10$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-2 Sample No. 4 Sampling Method Surber Collection Date 11-18-76 Project NO. LSLT

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Capnia	Sp. A 1		
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	1	

Biologist _____ Total Number of Taxa 1

1 = 0

1 = 0

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-2 Sample No. 5 Sampling Method SURBER Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenoides*		2	2 .6021
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*		1	1 0
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	Chironomus		1	1 0
	Ceratopogonidae				1/2 .6021
			TOTAL	4	$\log_{10} 4 = 2.4082$

Biologist [signature] Total Number of Taxa 3

$\bar{d} = 1.50$

Composite - best 3 of 4 samples

504 361
367

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. Composite Sampling Method SURBER Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	14	16.0458	1
		Rhithrogena	*undulata*	27	192.7169	6
	Baetidae	*Baetis* B	*bicaudatus* TRICAUDATUS (?)	30	44.3136	15
		Callibaetis				
		Ephemerella	*LIEMIS (?)*	126	264.6467	
			SP. A	1	0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	2	0.6021	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		10	10.	
		Arcynopteryx				
		OEMOPTERYX	*Foskettí*	6	4.6689	
	Perlidae	*Taenionema*	*pacifica*	3	1.4314	65
		Acroneuria				
	Capniidae	*Capnia*	*VERNALIS*	7	5.9157	
		C.	*SP. A*	4	2.4082	
Trichoptera	Hydropsychidae	*Hydropsyche*		2	0.6021	
		CHEUMATOPSYCHE SP		31	46.2322	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae		*SP A*	1	0.0	
Diptera	Simuliidae			9	8.5882	
	Culicidae					
	Chironomidae	*Chironomus*	*SP*	12	12.9502	
		Orthocladius (?)	*SP*	1	0	
	~~Ceratopogonidae~~	*CRICTOPUS (?)*	*SP*	2	0.6024	
		GENUS A		5	5.4949	
		~~[redacted]~~		~~[redacted]~~		
	Ceratopogonidae			2	0	
		Empididae		32	0.6021	
	viridae			1	2615.8214	
			TOTAL	368		

Biologist [signature] Total Number of Taxa 22

$\bar{d}$ = 2.96

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 1 Sampling Method SURBER Collection Date 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ?	3	1.4314	1
		Rhithrogena	*undulata* ~~18 21~~ 22	~~18~~ 22	29.5333	6
	Baetidae	*Baetis*	*bicaudatus*			15
		E. TRICAUDATUS?		7	5.9157	
		Callibaetis				
		Ephemerella	~~22~~ 24	24	33.1251	
		E. Sp. A	1	1	0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
		C = MOSTOGRYX	1	1	0	
	Perlidae	*Taenionema*	*pacifica*	1	0	65
		Acroneuria				
		CAPNIA	*VERNALIS* 1	1	0	
		C.	*Sp. A* 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		Chevmatopsyche	*Sp.* 13	13	14.4813	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
		Genus A *	1	1	0	
	Elmidae					
Diptera	Simuliidae		5	= 5	3.4949	
	Culicidae					
	Chironomidae	*Chironomus*	*Sp. A* 2	2	.6021	
		CRICTOPUS ~~SERICEUS~~	*Sp. B* 1	1	0	
	Ceratopogonidae			1	0	
				Σ	88.5838	
			TOTAL	84	$\log_{10} 84 = 161.6395$	

Biologist [signature] Total Number of Taxa 15

$\bar{d} = 2.89$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. _____

Station No. F-3 Sample No. 2 Sampling Method SURBER Collection Date ~~11~~ 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 1	1	0	1
		Rhithrogena	*undulata* ~~13+7+4~~	19	24.2963	6
	Baetidae	*Baetis*	*bicaudatus*			15
			B TRICAUD 3	3	1.4314	
		Callibaetis				
		Ephemerella	18	18	22.5949	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus* (Isogenoides) Frontalis 2		2	.6021	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		Capnia	VERNALIS 1	1	0	
			SP. A 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		Cheumatopsyche	4	4	2.4082	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
					51.3329	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
			TOTAL	99	$\log_{10} 99 = 82.8196$	

Biologist _____ Total Number of Taxa 8

$\bar{d} = 2.13$

Shown on table as Surber #3

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 4 Sampling Method Surber Collection Date 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	1.4314	1
		Rhithrogena	*undulata*	4	4.6689	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis	TRI 3	3	1.4314	
		Ephemerella	5 16	16	19.2659	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	~~3~~ 2	.6021	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
		OLIGOPTERYX	2	2	.6021	
	Perlidae	*Taenionema*	*pacifica*	1	0	65
		Acroneuria	2	2	.6021	
Trichoptera	Hydropsychidae	*Hydropsyche*		2	.6021	
		Ceratopsyche	5	5	3.4949	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		32.7009	81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	~~Culicidae~~					
	Chironomidae	Chironomus (?) sp.	1	1		
		Orthocladius (?) sp.	1	1		
	~~Ceratopogonidae~~	CRICTOPUS (?) sp.	1	1		
			TOTAL	45	$45 \log_{10} 45 = 74.3946$	

Biologist CRay Total Number of Taxa 13

$\bar{d} = 3.08$

Shown on table as Sweltz 4

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-3 Sample No. 3/6 Sampling Method SURBER Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ~~25~~	5	3.4949	1
		Rhithrogena	*undulata* 4+15+16	16	19.2659	6
	Baetidae	*Baetis*	*bicaudatus* B TRICAUDATUS ? 10	10	10.000	15
		Callibaetis				
		Ephemerella	~~34~~ 35 36	36	56.0269	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus* (Isogenoides)	4	4	1.4082	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*		.6021	65
		Acroneuria				
	Capniidae	CAPNIA	JERMALIS 2	2	~~2.40~~	
		C.	Sp. A 1	1	0	
		OSMOPTERYX	2	2	.6021	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		CHEUMATOPSYCHE	9	9	8.5882	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	CHIRONOMUS	SP. A 4	4	1.4082	
		GENUS A	SP. B 4	4	1.4082	
	~~Ceratopogonidae~~	CRICTOPUS	SP. A 1	1	0	
	EMPIDIDAE	~~Genus B~~	2	2	.6021	
				5	106.4068	
	HAEMIDAE		1	1		
			TOTAL	97 log .097 = 192.7169		

Biologist C R Total Number of Taxa 14

d = 2.96

in QRT

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 27 Sampling Method Surber Collection Date 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* n2	2	.6021	1
		Rhithrogena	*undulata* 31-34	34	52.0703	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis	b TRICAUDATUS ? 7	7	5.9157	
		Ephemerella	5 31-32	32	48.1648	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus* (Isogenoides) frontalis Y34		4	2.4082	
		Arcynopteryx OENOPTERYX	1	1	0	
	Perlidae	*Taenionema*	*pacifica* 1	1	0	65
		Acroneuria C	VERNALIS 1	1	0	
		C.	SP. A 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae	*Simulium* ?	sp ?4	4	2.4082	
	Culicidae					
	Chironomidae	*Chironomus*	(Riparius?) 5	5	3.4949	
	Ceratopogonidae		1	1		
	Empididae		1	1		
				4	115.0647	

1 empty Leptocella case

TOTAL 94 $\log_{10}$ 94 = 185.4740

Biologist O Parr Total Number of Taxa 13

$\bar{d}$ = 2.49

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. Composite Sampling Method SURBER Collection Date III-20-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	2 0.6021	1
		Rhithrogena	*undulata*	1 0.0	6
	Baetidae	*Baetis*	*bicaudatus*		15
		B ERICAUDATUS (?)		3 1.4314	
		Callibaetis			
		Ephemerella		3 1.4314	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenoides*		1	
		Arcynopteryx			
		OENOPTERYX FOCKETTI		4 2.4082	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Capnia	VERRUCIS (?) SPA	9 8.5882	
				40 64.0824	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
		LEPTOCELLA	SP	1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae	Hygrotus	SP	1	
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			5 3.4949	
	Ceratopogonidae			82.0306	
		Limnodrilus		1	
			TOTAL	73	

Biologist _____ Total Number of Taxa 14

J = 2.46

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1617-17

Station No. F-4 Sample No. 1 Sampling Method SURBER Collection Date 11-20-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*		$h \log_{10} h$	15
		Callibaetis				
		Ephemerella				
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
		Cremopteryx	1	1	0	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		Capnia	*vernalis* 2	2	0.6021	
			sp. A9	9	8.5882	
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*		4	9.1903	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
		Hygrotus	1	1		
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	*sp.*	1		
	Ceratopogonidae					
			TOTAL	17	$\log_{10} 14 = 16.0458$	

Biologist [signature] Total Number of Taxa 5

$\bar{d} = 1.46$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-4 Sample No. 2 Sampling Method Surber Collection Date III-20-76 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	$n \log_{10} n$	1
		Rhithrogena	*undulata*			6
	Baetidae	*Baetis*	*bicaudatus*			15
			Bicaudatus (?)	2	.6021	
		Callibaetis				
		Ephemerella	2	2	.6021	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*	1	1	0	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
	Capniidae	*Capnia*	*Fervalis* ?	7	5.9157	
			Sp. A. 30	30	44.3136	
					51.4335	
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus	Sp. A	1		
	Ceratopogonidae					
			TOTAL	44		

$44 \log_{10} 44 = 72.3119$

Biologist _____ Total Number of Taxa 6

$\bar{d} = 1.58$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-4 Sample No. 3 Sampling Method SURBER Collection Date ~~JUL~~ 20-74

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	~~1~~	1
		Rhithrogena	*undulata* /	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
		OEMOPTERYX	2	2	.6021
	Perlidae	*Taeniopteryx*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
	LEPTOCERIDAE	LEPTOCELLA	sp 1	1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	CHIRONOMUS	+2	2	.6021
	Ceratopogonidae			5	1.2042
	Tubificidae	LIMNODRILUS	sp 1	1	
			TOTAL	7	$\log_{10}7 = 5.9157$

Biologist _____ Total Number of Taxa 25

$\bar{d} = 2.24$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 1 Sampling Method [illegible] Collection Date [illegible]

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*	40	81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	2	

$\log_{10} 2 = 0.6021$

Biologist [illegible] Total Number of Taxa 2

$\bar{d} = 1.00$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-4 Sample No. 5 Sampling Method SURBER Collection Date III-20-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* /	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus* TRICAUDATUS(?) /	1	15
		Callibaetis			
		Ephemerella	/	1	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Capnia	*sp. A* /	1	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	CHIRONOMUS	/	1	
	Ceratopogonidae				

$W \log_{10} N$

0

0

1

40

TOTAL 45 $\log_{10} 5 = 3.4949$

Biologist [signature] Total Number of Taxa 5

$d = 2.32$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1511-17

Station No. F-5 Sample No. Composite Sampling Method SURBER Collection Date III-20-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	4	2.4082	1
		Rhithrogena	*undulata*	16	19.2659	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis	TRICAUDATUS (?)	17	20.9176	
		Ephemerella		16	19.2659	
		Trichorythodes	*minutus*	2	.6021	36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
	AGRIONIDAE	HETAERINA		2	.6021	
Plecoptera	Perlodidae	*Isogenoides*		1		
		Acroneuria				
		CAPNIA	SPA	6	4.6689	
	Perlidae	*Taeniopteryx*	*pacifica*	1		65
		Acroneuria				
		OEMOPTERYX	FOSKETTI	6	4.6689	
		CAPNIA	VERNALIS	3	1.4314	
Trichoptera	Hydropsychidae	*Hydropsyche*		2	.6021	
		CHEUMATOPSYCHE		18	14.4813	
	Limnephilidae				37	
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	~~Culicidae~~	CRICOTOPUS ?	SP	1	1	
	Chironomidae	CHIRONOMUS	SP	10	10	
		ORTHOCLADIUS		8	8	
	Ceratopogonidae			2	2	
	TIPULIDAE	HEXATOMA	SP	1	1	
					Σ 106.7412	
			TOTAL	111		

Biologist [signature] Total Number of Taxa 16

d = 3.60

Meander

MACROINVERTEBRATE LAB WORKSHEET

Project NO. CS17

Station No. E.5 Sample No. 1 Sampling Method SURBER Collection Date 11-20-16

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* /	1	$\log_{10}$ 0	1
		Rhithrogena	*undulata* 4	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus* / TRICAUDATUS ? 4	4	2.4082	15
		Callibaetis				
		Ephemerella	3	5	3.4949	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
	ASHIONIDAE	HETAERINA	2	2	.6021	
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
		OEMOPTERYX	2	2	.6021	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		CAPNIA	Sp. # 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		Cheumatopsyche	1	1	0	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomus	sp 3	3	1.~~8~~314	
	Ceratopogonidae				10.9469	
				5		
			TOTAL	23	$\log_{10} 23 = 31.3197$	

Biologist Clay Total Number of Taxa 9

$\bar{d} = 2.94$

MACROINVERTEBRATE LAB WORKSHEET

Station No. E5 Sample No. 2 Sampling Method [illegible] Collection Date [illegible] Project NO. [illegible]

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	$w \log_{10} w$ 1.4314	1
		Rhithrogena	*undulata*	5	3.4949	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis		3	1.4314	
		Ephemerella	*inermis*	2	.6021	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx		3	1.4314	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		Calineuria	*californica*	1	0	
			verrucalis sp. A	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
			Psychis sp.	2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus* sp.		5	3.4949	
	Ceratopogonidae				12.4882	
				5		

TOTAL [illegible]

$25 \log_{10} 25 = 34.9485$

Biologist C Ley Total Number of Taxa 9

$d = 2.98$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F.5 Sample No. 3 Sampling Method Surber Collection Date 11-20-76 Project NO. 1817

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 4	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus* 3	3	1.4314	15
		Callibaetis				
		Ephemerella	2	2	.6021	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		Claassenia	2	2	.6021	
			1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*	3	3	.6021	
			3	3	1.4314	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	1	1	0	
		Orthocladius	3	3	1.4314	
	Ceratopogonidae					
	Tipula	*Tipula*	1	1	6.1005	
				4		
			TOTAL	22	$\log_{10} 22 = 29.5333$	

Biologist [signature] Total Number of Taxa 10

$\bar{d} = 3.54$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-5 Sample No. 4 Sampling Method Surber Collection Date III-20-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	2	2 (2) 0.604	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica* 1	1 2	65
		Acroneuria			
		Caddis	1	1	
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus* ~~Leptocella~~ cases - empty			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae		1	1	
				0.6021	
				4	
			TOTAL	5 $\log_{10} 5 = 3.4949$	

Biologist [signature] Total Number of Taxa 4

$d = 1.92$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 151717

Station No. F-5 Sample No. 5 Sampling Method Surber Collection Date III-20-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 3	3	1.4314	6
	Baetidae	*Baetis*	*bicaudatus* TRI	7	5.9157	15
		Callibaetis				
		Ephemerella	5	5	3.4949	
		Trichorythodes	*minutus* 2	2	.6021	36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	1	1		
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		CAPNIA	2	2	.6021	
		~~Arcynopteryx~~	1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*				
		Chevumatopsyche	~~2~~ 5 7	7	5.9157	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	~~Culicidae~~	*Chironomus?*		1	0	
	Chironomidae	*Orthocladius*	~~4~~ 5 1	5	3.4949	
		Tricotopus	1	1	0	
	Ceratopogonidae		1	1	0	
				~~2~~	21.4568	
			TOTAL	36	$\log_{10} 36 = 56.0269$	

Biologist [signature] Total Number of Taxa 12

$\bar{d} = 3.19$

Kidscreen Samples $\sqrt{208}$ $(14^2 = 76)$

x_n	x_i^2	
177	31329	
181	32761	
52	2704	
43	1849	
310	96100	164743
61	3721	
20	400	
15	225	
10	100	
11	121	4567
66	4356	
65	4225	
112	12544	
207	42849	
116	13456	77430
51	2601	
43	1849	
31	961	
42	1764	
45	2025	9200
58	3364	
51	2601	
33	1089	
51	2601	
29	841	10496
1880	$(\Sigma x)^2$ 266436	

$s^2 = 5211$

$s = 73.2$

$s_{\bar{x}} = 14.5$

$\bar{x} = 75$

$\bar{x} \pm (t)(s_{\bar{x}}) = 75 \pm 19$

$25 = \frac{t^2 s^2}{(75x)^2}$: ~~5625~~

$25 = \frac{(1.74)(5211)}{5625x^2}$

$(5625x^2) = \frac{(1.74)(5211)}{25} = 9067$

$5625x^2 = \frac{363}{5625} = 0.065$

$x = 0.255$

Error of mean = 25.5%

Confidence level ($75 \pm$ %)

$\bar{x} = 75.2$

$\Sigma x_n^2 = 3534400$

$s^2 = \frac{266436 - \frac{3534400}{25}}{24} = 141376$

$s^2 = 5211$

$s = 73.2$

COMPOSITE

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-1 Sample No. 1-5 composite Sampling Method Kicksereen Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	73	136.0226	1
		Rhithrogena	*undulata*	102	204.8772	6
	Baetidae	*Baetis*	*bicaudatus*			15
			Tricaudatus (?)	6	4.6689	
		Callibaetis				
		Ephemerella		284	711.1995	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*	1	0	43
		Ophiogomphus	*severus*	8	7.2247	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		29	42.4085	
	~~Perlidae~~	*Arcynopteryx*				
		Taenionema	*pacifica*	4	2.4082	65
		Acroneuria				
		Arcynopteryx	*fosteri*	13	14.4813	
		Capnia	*Varnalis*	10	10	
			Sp. A	5	3.4949	
Trichoptera	Hydropsychidae	*Hydropsyche*		125	262.1138	
		Chemotaylyche Sp		28	40.5204	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
		Cricotopus (?)	*sp*	2	.6021	
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*		18	22.5949	
		Orthocladius (?)	*Spp*	34	52.0703	
	Ceratopogonidae	*Limnophora*		4	3.4082	
		Atherix	*variegata*	7	8.5382	
				2	.6021	
			TOTAL	762		

Tipulidae

$162 \log_{10} 162 = 2196.0497$

Biologist _____ Total Number of Taxa 19

$\Sigma n \log_{10} n = 1526.2868$

$\bar{J} = 2.92$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-1 Sample No. 2 Sampling Method SCREEN Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	4	2.4082	1
		Rhithrogena	*undulata*	39	62.0515	6
	Baetidae	*Baetis*	*bicaudatus*			15
			6 *tricaudatus* ?	1	0	
		Callibaetis				
2 spp ? ?		*Ephemerella*	*lacrimis* (?)	73	136.0226	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	1	0	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*frontalis*	8	7.2247	
		~~*Arcynopteryx*~~				
	Perlidae	~~*Taeniopteryx*~~	*pacifica*	2	.6021	65
STET		~~*Acroneuria*~~				
	Capniidae	*Capnia*	*lacheili*	4	2.4082	
		C.	*nevadensis*	3	1.4312	
			sp. A	3	1.4312	
Trichoptera	Hydropsychidae	*Hydropsyche*	*sp*	18	22.5949	
		Cheumatopsyche		18	22.5949	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Orthocladius* (?)	*sp*	2	.6021	
		GENUS A		1	0	
	Ceratopogonidae					
	TIPULIDAE	—	— —	1	0	
	RHAGIONIDAE	ATHERIX	VARIEGATA	3	1.4312	
					Σ260.8028	
			TOTAL	181		

181 $\log_{10}$ 181 : 408.6398

Biologist [signature] Total Number of Taxa 16

$$\frac{408.6398 - 260.8028 \times 3.321928}{181} = \bar{d} = 2.71$$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-1 Sample No. 2 Sampling Method SCREEN Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	4	2.4082	1
		Rhithrogena	*undulata*	39	62.0515	6
	Baetidae	*Baetis*	*bicaudatus*			15
			& *tricaudatus* ?	1	0	
		Callibaetis				
2 spp ? ?		*Ephemerella*	*inermis* (?)	73	136.0226	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	1	0	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*frontalis*	8	7.2247	
		~~*Arcynopteryx*~~				
	Perlidae	~~*Taeniopteryx*~~	*pacifica*	2	.6021	65
STET		~~*Acroneuria*~~				
			fosketti	4	2.4082	
Capniidae		*Capnia*	*nevadensis*	3	1.4312	
		C.	*sp. A*	3	1.4312	
Trichoptera	Hydropsychidae	*Hydropsyche*	*sp*	18	22.5949	
		Cheumatopsyche		18	22.5949	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Orthocladius* (?) *sp*		2	.6021	
		Genus A		1	0	
	Ceratopogonidae	—	— —	1	0	
	Tipulidae					
	Rhagionidae	*Atherix*	*variegata*	3	1.4312	
					Σ 260.8028	
			TOTAL	181		

181 log$_{10}$ 181 : 408.6398

Biologist _____ Total Number of Taxa 16

$$\frac{408.6398 - 260.8028 \times 3.321928}{181} = \bar{d} = 2.71$$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 1 Sampling Method SCREEN Collection Date III-22-76

n log 10 n

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ~~17~~ 20 2	23	31.3197	1
		Rhithrogena	*undulata* ~~12~~ 26	26	36.7893	6
	Baetidae	*Baetis*	~~bicaudatus~~ 2 3	3	1.4314	15
		Callibaetis				
		~~82~~ *Ephemerella* 35	~~2 + 25 = 77~~	85	16.4.0006	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus* 1	1	0	43
		Ophiogomphus	*severus* 2	25	0.6021	45
		O.	BISON 2 1	1	0	
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	~~3 5~~ 6	6	4.6683	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica* 2	3	0.6021	65
4 adult		*Acroneuria*				
	TAENIOPTERYGIDAE	OEMOPTERYX	FACKELLI 4	4	2.4082	
	CAPNIIDAE	CAPNIA	SP 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*	7	2	5.9157	
	Limnephilidae	Chermatopsyche	2	2	0.6021	
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae		1	1	0	
	Culicidae					
	Chironomidae	Chironomus	RIPARIUS (?)	~~7~~ 9	8.5882	
		ORTHOCLADIUS	(?) SP 2	2	0.6021	
	Ceratopogonidae				257.5304	
	RHAGIONIDAE	ATHERIX	VARIEGATA 1	1	0	
			1	1	0	
	TIPULIDAE					
			TOTAL	171	397.8913	

Biologist [signature] Total Number of Taxa 18

$\bar{J} = \frac{3.321928\,(397.8913 - 257.5304)}{171} =$

2.63

Rhinichthys osculus

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-1 Sample No. 1 Sampling Method SCREEN Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	23	31.3197	1
		Rhithrogena	*undulata*	26	36.7893	6
	Baetidae	*Baetis*	~~*bicaudatus*~~	3	1.4314	15
		Callibaetis				
		Ephemerella		85	164.0306	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*	1	0	43
		Ophiogomphus	*severus*	2	0.6021	45
		O.	*bison*	1	0	
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*		6	4.6667	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*	2	0.6021	65
		Acroneuria				
+1 adult	Taeniopterygidae	*Oemopteryx*	*facetti*	4	2.4082	
	Capniidae	*Capnia*	*sp*	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*		2	5.9157	
	Limnephilidae			2	0.6021	
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae			1	0	
	Culicidae					
	Chironomidae	*Chironomus*	*riparius* (?)	9	8.5852	
		Orthocladius	*(?) sp*	2	0.6021	
	Ceratopogonidae				257.5304	
Phagocata		*Athericix*	*Vanuxemi*	1	?	
				1		
			TOTAL	177	317.3713	

Biologist [signature] Total Number of Taxa 18

$\bar{d} = \frac{3.32\,1928\,(317.3913 - 257.5304)}{177} = 2.63$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E1 Sample No. 3 Sampling Method ~~SCREEN~~ Collection Date ~~11-22-76~~

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* /	1	0	1
		Rhithrogena	*undulata* 1+22	22	29.5333	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	*INERMIS(?) (SpA)*	12	12.9502	
			SpB	1	0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*Elongatus*	7	5.9157	
	TAENIOPTERYGIDAE	*Arcynopteryx* *Oemopteryx*	*Fosketti*	2-3	1.4314	
	Perlidae	*Taenionema*	*pacifica*			65
	CAPNIIDAE	*Acroneuria* *CAPNIA*	*SP*	2	.6021	
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus* *Genus A*	*SP*	1	0	
				3	1.4314	
	Ceratopogonidae				Σ51.8641	

TOTAL 52

$52 \log_{10} 52 = 89.2322$

Biologist _____ Total Number of Taxa 9

$\bar{d} = 2.39$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E1 Sample No. 3 Sampling Method Screen Collection Date 11-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	0	1
		Rhithrogena	*undulata*	22	29.5333	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	*inermis* (sp A)	12	12.9502	
			SP. B	1	0	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*Zionensis*	7	5.9157	
	Pteronarcyidae	*Arcynopteryx*	*Compacta*	3	1.4314	
	Perlidae	*Taenionema*	*pacifica*			65
	Capniidae	*Acroneuria*			.6021	
		CAPNIA	*sp*	2		
Trichoptera	Hydropsychidae	*Hydropsyche*				
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	*sp*	1	0	
		CELLIA		3	1.4314	
	Ceratopogonidae					
					Σ 51.8641	

$52 \log_{10} 52 = 89.2322$

TOTAL 52

Biologist _____ Total Number of Taxa 9

$\bar{d} = 2.39$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-1 Sample No. 4 Sampling Method SCREEN Collection Date 11-22-76 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES		NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	11	2	.6021	1
		Rhithrogena	*undulata*				6
	Baetidae	*Baetis*	*bicaudatus*				15
		Callibaetis					
		Ephemerella		23	33	33.1251	
		Trichorythodes	*minutus*				36
		Lachlania					
		Traverella	*albertana*				27
Odonata	Gomphidae	*Gomphus*	*intricatus*				43
		Ophiogomphus	*severus*				45
	Libellulidae						
	Aeschnidae						
Plecoptera	Perlodidae	*Isogenoides* ?		1	1	1	
		Arcynopteryx					
	Perlidae	*Taenionema*	*pacifica*				65
	Capniidae	*Capnia*	*Sp. A*		4	2.4082	
			Sp. B		2	.6021	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	1		
	Limnephilidae						
	Brachycentridae	*Brachycentrus*					
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*				81
	Gerridae						
Coleoptera	Dytiscidae	*Agabus*					
	Elmidae						
Diptera	Simuliidae						
	Culicidae						
	Chironomidae	*Chironomus*	*sp*	?	8	7.2247	
	Ceratopogonidae					E 43.9622	
						0	
			TOTAL		48		

Biologist GORDIAN D Total Number of Taxa 7

$\bar{d} = 1.67$

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-1 Sample No. 4 Sampling Method Surber Collection Date 8-22-76 Project NO. 1577

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	2 x Lytton .6021	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		24 33.1251	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*		1	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
	Capniidae	Capniid	SP. A	4 2.4082	
				E2 .6021	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae	Chironomus	sp.	8 7.2247	
	Ceratopogonidae			E 43.9622	
				0	
			TOTAL	47	

Biologist [signature] Total Number of Taxa 7

E = 1.67

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 5 Sampling Method SCREEN Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ~~30 37 42~~	43	70.2391	1
		Rhithrogena	*undulata* ~~8 10 15~~	15	17.6414	6
	Baetidae	*Baetis*	*bicaudatus* TRICAUDATUS (?)	12	0.6021	15
		Callibaetis				
		Ephemerella	~~89~~	89	173.4957	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	4	2.4082	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*Hansitata*	7	3.9157	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
	TAENIOPTERYGIDAE	*Oemopteryx*	*Eastella*	2	0.6021	
Trichoptera	Hydropsychidae 88	*Hydropsyche*	*sp* 99 8	99 8	197.5679	
	Limnephilidae	CHEUMATOPSYCHE GENUS A		1		
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	ORTHOCLADIUS ? CRICTOPUS ?		~~20~~ 3	44.3136	
	Ceratopogonidae					
	RHAGIONIDAE	ATHERIX	VARIEGATA	5	3.4949	
	TIPULIDAE			1	0.60	
	TRICHOCERIDAE			1	516.2807	
			TOTAL	310	594.6536	

Biologist [signature] Total Number of Taxa 15

769. 3972

$\bar{d} = 2.72$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-1 Sample No. 5 Sampling Method ~~SCREEN~~ Collection Date III-22-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	43	70.2391	1
		Rhithrogena	*undulata*	15	17.6414	6
	Baetidae	*Baetis*	*bicaudatus*	12	5.6021	15
		Callibaetis				
		Ephemerella		89	173.4957	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	4	2.4902	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*		7	5.9157	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
	Taeniopterygidae	*Oemopteryx*	*Eastella*	2		
Trichoptera	Hydropsychidae 88	*Hydropsyche*	sp. 88	98	197.5679	
		Chemmatopsyche		1		
	Limnephilidae	*Genus A*				
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Orthocladius* ?		30	44.3136	
		Cricotopus ?				
	Ceratopogonidae					
	Empididae	*Atherix*	*variegata*	5	3.4949	
				1	516.2807	
			TOTAL	310		

Biologist _____ Total Number of Taxa 15

769. 3972

$\bar{d} = 2.72$

COMPOSITE

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No Composite Sampling Method Screen Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	7	5.9157	1
		Rhithrogena	*undulata*	19	24.2963	
	Baetidae	*Baetis*	TRICAUDATUS (?)	2	.6021	6
		Pseudocloeon	*turbidum*			15
		Dactylobaetis	*cepheus*			
	Ephemerellidae	*Ephemerella*	/ *inGRAMIS*	37	46.2322	
	Trichorythidae	*Trichorythodes*				36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*			27
	Leptophlebiidae	*Traverella*	*albertana*			
						43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*frontalis*	7	5.9157	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			55
		Acroneuria				
		Oinopteryx	*Koskotti*	14	16.0458	
		Capnia	*VERNALIS*	11	11.4553	
		C.	*Sp. A*	8	7.2247	
Trichoptera	Hydropsychidae	*Hydropsyche*		3	1.4314	
		Cheumatopsyche	*sp.*	6	4.6689	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
						81
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	*sp*	3	1.4314	
		Genus A		5	3.4949	
	Ceratopogonidae					
					2128.7144	
		Limnodrilus	*claparedianus*	1		
			TOTAL	117		

Biologist [signature] Total Number of Taxa 13

$\bar{d} = 3.22$

COMPOSITE

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No Composite Sampling Method Screen Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagenia*	*elegantula*	7	5.9157	1
		Rhithrogena	*undulata*	19	24.2963	
	Baetidae	*Baetis*	TRICAUDATUS (?)	2	.6021	6
						15
		Pseudocloeon	*turbidum*			
		Dactylobaetis	*cepheus*			
	Ephemerellidae	*Ephemerella*	*INFREQUENS*	31	46.2322	
	Trichorythidae	*Trichorythodes*				36
	Oligoneuriidae	*Lachlania*	*saskatchewanensis*			27
	Leptophlebiidae	*Traverella*	*albertana*			
						43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*frontalis*	1	5.9157	
		Arcynopteryx				
	Perlidae	*Taeniopteryx*	*pacifica*			65
		Acroneuria				
		Oemopteryx	*Koshootti*	14	16.0458	
		Capnia	*VERNALIS*	11	11.4553	
		C.	*sp. A*	6	7.2247	
Trichoptera	Hydropsychidae	*Hydropsyche*		3	1.4314	
		Cheumatopsyche	*sp.*	6	4.6689	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	*sp.*	3	1.4314	
		Genus A		5	3.4949	
	Ceratopogonidae					
					2128.7144	
		Limnodrilus	*cf. APARCDIANUS*	1		
			TOTAL	117		

Biologist [signature] Total Number of Taxa 13

$d = 3.22$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 1 Sampling Method Kicksreen Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 7	7	5.9157	1
				1	0	
		Rhithrogena	*undulata* /			6
	Baetidae	*Baetis*	*bicaudatus*			15
			TRICAUD ? 2	2	.6021	
		Callibaetis				
		Ephemerella	20	20	26.0206	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	~~Perlidae~~	*Taenionema*	*pacifica*			65
	Taeniopterygidae	*Acroneuria*				
	Capniidae	*Capnia*	*VERNALIS* (?) 6	7	5.9157	
			SP. A *	6	4.6689	
Trichoptera	Hydropsychidae	*Hydropsyche*	1	1	0	
		Cheumatopsyche	2	2	0.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	CHIRONOMUS	3	3	1.4314	
		GENUS #	5	5	3.4949	
	Ceratopogonidae				Σ 53.3203	
Annel. l.d.						
	tubificidae	Limnodrilus	Claparedianus	1	0	
Coleopteran larvae			TOTAL	61		

Biologist [signature] Total Number of Taxa 12

$\bar{d} = 3.02$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 1 Sampling Method Kicksceen Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 7	7	5.9157	1
				1	0	
		Rhithrogena	*undulata* 1			6
	Baetidae	*Baetis*	*bicaudatus*			15
			5	2	.6021	
		Callibaetis				
		Ephemerella	20	20	26.0206	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*				
		Arcynopteryx				
	~~Perlidae~~	*Taenionema*	*pacifica*			65
		Acroneuria				
	Cyprinidae	Cyprinid		6	4.6689	
		"		7	5.9157	
		"	Sp. A	6	4.6689	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	0	
			2	2	0.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae		3	3	1.4314	
			5	5	3.4949	
	Ceratopogonidae				Σ 53.3203	
				1	0	
			TOTAL	61		

Biologist [signature] Total Number of Taxa 12

$\bar{d} = 3.02$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 2 Sampling Method KICKSCREEN Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	$n \log_{10} n$	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 7	7	5.9157	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	4	4	2.4082	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	3	3	1.4314	
		Arcynopteryx				
		Oemopteryx	*Fokett.* 4	4	2.4082	
	Perlidae	*Taenionema*	*pacifica*			65
	Capniidae	*Acroneuria*				
		Capnia	*vernalis(?)*	1	0	
			sp. A. 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*			Σ 12.1635	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
			TOTAL	20		

Biologist [signature] Total Number of Taxa 6

$\bar{d} = 2.30$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 2 Sampling Method Kicksreen Collection Date III-13-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
					$n \log_{10} n$	
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 7	7	5.9157	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	4	4	2.4082	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	3	3	1.4314	
		Arcynopteryx				
		Oemopteryx	*Fosketti* 4	4	2.4082	
	Perlidae	*Taenionema*	*pacifica*			65
	Capniidae	*Acroneuria*				
		Capnia	*vernalis*	1	0	
			sp. A. 1	1	0	
Trichoptera	Hydropsychidae	*Hydropsyche*			Σ 12.1635	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
			TOTAL	20		

Biologist [signature] Total Number of Taxa 6

$\bar{d} = 2.30$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-2 Sample No. 3 Sampling Method Kicknet Collection Date III-18-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 2	2	0.6021	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	~~sp~~ 5	5	3.4949	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus* ~~sp~~ DEC	3	3	1.4314	
		Arcynopteryx				
	Perlidae	DEMOTLEPTY X	Fosketti	3	1.4314	
		Taenionema	*pacifica*			65
		Acroneuria				
		Capnia	sp 1	1		
Trichoptera	Hydropsychidae	*Hydropsyche*	~~sp~~ 1	1		
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
					EC.9598	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
			TOTAL	15		

Biologist _____ Total Number of Taxa 6

$d = 2.8$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-2 Sample No. 3 Sampling Method Kick Screen Collection Date 7-12-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*			1
		Rhithrogena	*undulata* 2	2	0.6021	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	3 2 4	5	3.4949	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus* ?	3	3	1.4314	
		Arcynopteryx				
		Skwala ?	*Fosketti*	3	1.4314	
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		Calineuria ?	*sp.* ? 1	1		
Trichoptera	Hydropsychidae	*Hydropsyche*	*sp.* ?	1		
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
					E6.9598	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae					
	Ceratopogonidae					
			TOTAL	15		

Biologist _____ Total Number of Taxa 6

d = 2.87

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 4 Sampling Method SCREEN Collection Date III-15-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	8 ~~8~~ 7.2247	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus* SIDES	1	1	
		Arcynopteryx CAPNIA	*Vernalis* 1	1	
	Perlidae	*Taeniopteryx*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	10	

Biologist _____ Total Number of Taxa 3

$\bar{d} = 0.92$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 4 Sampling Method SCREEN Collection Date III-15-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	8	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella			
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*		1	
		Arcynopteryx			
		Capnia	*lineolis*	1	
	Perlidae	*Taeniónema*	*pacifica*		65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*			
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	10	

Biologist _____ Total Number of Taxa 3

$\bar{d} = 0.92$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-2 Sample No. 5 Sampling Method SCREEN Collection Date 11-13-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	1	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		2 .602	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Acroneuria capnia		1	
			sp. a	1	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
		Cheumatopsyche		4 2.4082	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		3.0103	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	11	

Biologist _____ Total Number of Taxa 7

$\bar{d} = 2.55$

Composite

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-1

Station No. E-3 Sample No. Composite Sampling Method D-frame/kick Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	41	66.1241	1
		Rhithrogena	*undulata*	54	93.5493	6
		BAETIS	tricaudatus (?)	9	8.5882	
	Baetidae	~~*Baetis*~~	*bicaudatus*	~~2~~		15
		Ameletus	albiscutellatus ?	2	.6021	
		Callibaetis				
		Ephemerella		277	476.5669	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*	~~1~~	0	43
		Ophiogomphus	*severus*	13	12.9502	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus/oides*		22	29.5333	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*	4	2.4082	65
		Acroneuria		3	1.4314	
		OEMOPTERYX	Boskettic.	12	17.6418	
		Capnia	Ultramula	8	7.2247	
			Sp. A	11	11.4553	
Trichoptera	Hydropsychidae	*Hydropsyche*		19	24.2963	
		Oligostomis	sp	44	66.1241	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*		1		
		Lepto-cella	sp.	1		
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae			1		
Diptera	Simuliidae			4	2.4082	
	Culicidae	ORTHOCLADIUS ?,	sp	8	7.2247	
	Chironomidae	CHIRONOMUS	~~sp~~ sp A	5	3.4949	
			sp B	3	1.4314	
	Ceratopogonidae	~~Ceratopogonidae~~		1	.6021	
	Elophar. ICERIDAE			1	.6021	
		Simuliidae		5	3.4949	
Lepidoptera	Pyralidae			6	4.6689	
				2	4.6689	
				1	.6021	
			TOTAL	566	Σ1087.6937	

Biologist [signature] Total Number of Taxa 29

$\bar{d} = 2.99$

Composite

MACROINVERTEBRATE LAB WORKSHEET

Project NO. L-17-1

Station No. E-5 Sample No. Composite Sampling Method [illegible] Collection Date [illegible]

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	11	46.1241	1
		Rhithrogena	*undulata*	54	93.5493	6
		[illegible]		3	8.5882	
	Baetidae	~~*Baetis*~~	*bicaudatus*	2	.6021	15
		Callibaetis				
		Ephemerella		111	676.5669	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*	1	0	43
		Ophiogomphus	*severus*	12	12.9502	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*		22	29.5333	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*	1	2.4082	65
		Acroneuria		5	1.4314	
		[illegible]	*Foskettia*	15	17.6419	
		[illegible]		3	7.2247	
		[illegible]		11	11.4553	
Trichoptera	Hydropsychidae	*Hydropsyche*		13	24.2963	
			sp	44	66.1241	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*		1		
			p.	1		
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae			1		
Diptera	Simuliidae			1	2.4082	
	Culicidae	[illegible]	?, sp	3	7.2247	
	Chironomidae			5	3.4949	
				3	1.4314	
	Ceratopogonidae			2	.6021	
				2	.6021	
				5	3.4949	
				1	4.6689	
				2	4.6689	
				1	.6021	
			TOTAL	566	Σ1087.6937	

Biologist [signature] Total Number of Taxa 29

$\bar{d} = 2.99$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-3 Sample No. 1 Sampling Method SCREEN Collection Date 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 9	9	8.5882	1
		Rhithrogena	*undulata* 4	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Ametropus	(*albrighti* ?)	1	0	
		Callibaetis				
		Ephemerella	*INERMIS?* 20	20	26.0206	6
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	1	0	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	*frontalis* 8	8	7.2247	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica* 3	3	1.4314	65
		Acroneuria				
		Cenopteryx	*coshetti* 3	3	1.4314	
Trichoptera	Hydropsychidae	*Hydropsyche*	D	2	.6021	
	Limnephilidae	*Chenmatopsyche* 2		2	.6021	
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	SP A 2	2	.6021	
			SP B 3	3	1.4314	
	Ceratopogonidae	*Palpomyia* (?)	SP 1	1		
	Empididae		3	3	1.4314	
	Blephariceridae	*Bibiocephala* (?)	1	1		
	Rhagionidae	*ATHERIX*	*VARIEGATA* 2	2	.6121	
	Pyralidae		1	1		
			TOTAL	66	252.3757	

Biologist _____ Total Number of Taxa 17

6

d: 3.4

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-3 Sample No. 1 Sampling Method SCREEN Collection Date 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 9	9	8.5882	1
		Rhithrogena	*undulata* 4	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Ametropus	(*Albrighti* ?)	1	0	
		Callibaetis				
		Ephemerella	*INERMIS* ? 20	20	26.0206	6
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	1	6	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*	*Frontalis* 8	8	7.2247	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica* 3	3	1.4314	65
		Acroneuria				
		OEMOPTERYX	*KOSHTAI* 3	3	1.4314	
Trichoptera	Hydropsychidae	*Hydropsyche*	D	2	.6021	
		Cheumatopsyche	2	2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	*Chironomus*	*sp* 2	2	.6021	
			3	3	1.4314	
	Ceratopogonidae	*Palpomyia* (?)	1	1		
			3	3	1.4314	
		Dicrotendipes	*Bidescahala* (?) 1	1		
		Kiefferulus	*Tibialis* 2	2	.6021	
			1	1		
			TOTAL	66	252.3757	

Biologist _____ Total Number of Taxa 17

d: 3.4

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-3 Sample No. 2 Sampling Method Screen Collection Date 11-17-76 Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ET 5	5	3.4949	1
		Rhithrogena	*undulata* 4	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	~~DEBRUIS~~ 4	29	42.4095	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenoides*	~~frontalis~~	1		
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
	Capniidae	*Capnia*	sp. ET 5	3	1.4314	
Trichoptera	Hydropsychidae	*Hydropsyche*	ET 5	3	3.4949	
	Limnephilidae	*Limnephilus*	sp. 2	1	.6021	
	Brachycentridae	*Brachycentrus*	1	1		
	Leptoceridae	*Leptocerus*	sp. 1	1		
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae		1	1		
Diptera	Simuliidae		2	1	.6021	
	Culicidae					
	Chironomidae	*Chironomus* sp.	2	1	.6021	
		Tanytarsus sp.	3	3	1.4314	
	Ceratopogonidae					
	Empididae		2	1	.6021	
					257.6808	
		Limnophora	(Diptera) 1	1		
				1		
Lepidoptera						
			TOTAL	65		

Biologist _____ Total Number of Taxa 17

$\bar{d} = 3.07$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 2 Sampling Method S[illegible] Collection Date 11-12-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	5	3.4949	1
		Rhithrogena	*undulata*	4	2.4082	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	~~DEERMIS~~	29	42.4095	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*			45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus*	~~FRONTALIS~~	1		
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		[illegible]		2	.6021	
		Capnia	sp.	3	1.4314	
Trichoptera	Hydropsychidae	*Hydropsyche*		5	3.4949	
		[illegible]	sp.	2	.6021	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*		1		
		[illegible]	sp.	1		
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae			1		
Diptera	Simuliidae			2	.6021	
	Culicidae					
	Chironomidae	*Chironomus*	sp.	2	.6021	
		Tanytarsus	sp.	3	1.4314	
	Ceratopogonidae					
	[illegible]			2	.6021	
					257.6808	
		[illegible]	[illegible]	1		
				1		
			TOTAL	65		

Biologist _____ Total Number of Taxa 17

$\bar{d} = 3.07$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 3 Sampling Method SCREEN Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 7	7	5.9157	1
		Rhithrogena	*undulata* 20	20	26.0206	6
	Baetidae	*Baetis*	*bicaudatus*			15
		Callibaetis				
		Ephemerella	1 ~~EREMIS~~ 5 5 53	52	102.2788	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	1	0	45
	Libellulidae					
	Aeschnidae					
Plecoptera	Perlodidae	*Isogenus* ~~idae~~	~~Frontalis~~ x2	2	0.6021	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
Cyprinidae		*Capnia*	*vernalis* *	1	0	
		Capnia	*sp.* 5	5	3.4949	
Trichoptera	Hydropsychidae	*Hydropsyche*	3	3	1.4314	
		Chewmatopsyche	sp 7	8	7.2247	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*				
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*			81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae					
	Culicidae					
	Chironomidae	Chironomini	sp. 1	1		
		Orthocl.	sp. 2	2	.6021	
	Ceratopogonidae					
Bleoharoceridae		Brachycercus	sp 1	1		
Rhagionidae		Atherix	variegata?	3	1.4314	
			TOTAL	112	Σ149.0017	

Biologist O'Kay Total Number of Taxa 13

d = 2.39

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 3 Sampling Method SCREEN Collection Date III 17 75

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* 7	1 5.9157	1
		Rhithrogena	*undulata* 2 0	10 26.0206	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	~~HERMES~~	52 102.2788	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	1 0	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*Florida* x2	2 0.6021	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria		1 0	
		Calineuria	*sp.* 5*	5 3.4949	
Trichoptera	Hydropsychidae	*Hydropsyche*	3	3 1.4314	
		Cheumatopsyche	*sp*	8 7.2247	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		*sp.* 1	1	
			sp. 2	2 .6021	
	Ceratopogonidae				
		Bezzia	*sp* 1	1	
		Atrichopogon		3 1.4314	
			TOTAL	112 Σ49.0017	

Biologist [illegible] Total Number of Taxa 13

$\bar{d} = 2.39$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 4 Sampling Method Kicknet Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	12 12.9502	1
		Rhithrogena	*undulata*	16 19.2659	6
	Baetidae	*Baetis* B. TRICAUDATUS group	~~*bicaudatus*~~	5	15
		Callibaetis			
		Ephemerella	(HERMIS ~~-112~~	112	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*	1	43
		Ophiogomphus	*severus*	3	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenoides*	~~*Frontalis*~~	6	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
	Capniidae	CAPNIA	VERNALIS 5	5	
		PLOPHIA	SP. A 3 SPEC 3*	3	
		DEMOCTENYX	*Fosteri* 1	1	
Trichoptera	Hydropsychidae	*Hydropsyche*	6	6	
		CHEUMATOPSYCHE	SP ~~22~~	22	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae		2	2	
	Culicidae				
	Chironomidae	Orthocladius (?)	6	6	
		Tanytarsus ?	3	3	
	Ceratopogonidae	Probezzia	1	1	
			TOTAL	207	

Biologist [signature] Total Number of Taxa 17

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 4 Sampling Method Kicknet Collection Date [illegible]

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	12 12.9502	1
		Rhithrogena	*undulata*	16 19.2659	6
	Baetidae	*Baetis* B. TRICAUDATUS	~~*bicaudatus*~~	5	15
		Callibaetis			
		Ephemerella	DORMIS	112	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*	1	43
		Ophiogomphus	*severus*	5	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*frontalis*	6	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
		[illegible]		5	
		[illegible]		3	
		[illegible]		1	
Trichoptera	Hydropsychidae	*Hydropsyche*		6	
		[illegible]		22	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			2	
	Culicidae				
	Chironomidae	Orthocladius(?)		6	
		[illegible]		3	
	Ceratopogonidae	[illegible]		1	
			TOTAL	207	

Biologist [signature] Total Number of Taxa 17

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. E-3 Sample No. 5 Sampling Method Screen Collection Date III-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ~~7~~ 8	8	1
SOME OF THESE NEAR EMERGENCE, OTHERS SMALL		*Rhithrogena*	*undulata* ~~2~~ 10	10	6
	Baetidae	*Baetis*	*bicaudatus*	4	15
		Callibaetis	TRICAUDATUS GROUP 4		
		Ephemerella	~~INFREQUENS~~ 58	58	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
SPRING EMERGER?		*drunella*	*albrighti* (?)	1	
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	4	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus/oides*	*frontalis*	5	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria	*abnormis* 3	3	
CAPNIIDAE		CAPNIA	VERNALIS 2	2	
		Oemopteryx	*callosa* 4	9	
Trichoptera	Hydropsychidae	*Hydropsyche*	3	3	
		Cheumatopsyche	*sp.* 7	7	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
EMPIDIDAE			1	1	
			TOTAL	116	

Biologist _____ Total Number of Taxa 13

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-3 Sample No. 5 Sampling Method Surber Collection Date III 17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	8	1
		Rhithrogena	*undulata*	10	6
	Baetidae	*Baetis*	*bicaudatus*	4	15
		Callibaetis			
		Ephemerella		58	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	1	27
			albrighti (?)		
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	4	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*frontalis*	5	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria		3	
				2	
				9	
Trichoptera	Hydropsychidae	*Hydropsyche*		3	
			sp.	7	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
	Tipulidae			1	
			TOTAL	112	

Biologist _____ Total Number of Taxa 13

Composite

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-4 Sample No. Composite Sampling Method Screen Collection Date 11-17-76 Project NO. 1517-17

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE		CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	28	40.5204	1
		Rhithrogena	*undulata*	2	.6021	6
	Baetidae	*Baetis* B.	*bicaudatus* TRICAUDATUS(?)	2	.6021	15
		Callibaetis				
		Ephemerella	*LYERATIS*	89	173.4957	
		Trichorythodes	*minutus*			36
		Lachlania				
		Traverella	*albertana*			27
Odonata	Gomphidae	*Gomphus*	*intricatus*			43
		Ophiogomphus	*severus*	12	12.9502	45
	Libellulidae					
	Aeschnidae					
	*COENAGRIONIDAE	GEN UNK		1		
Plecoptera	Perlodidae	*Isogenoides*		8	7.2247	
		Arcynopteryx				
	Perlidae	*Taenionema*	*pacifica*			65
		Acroneuria				
		OENOPTERYX	KOSKETTI	17	20.9176	
		Capnia	Vernalis	5	3.4949	
			SP. A	10	10	
Trichoptera	Hydropsychidae	*Hydropsyche*		4	2.4082	
		CHEUMATOPSYCHE	SP.	10	10	
	Limnephilidae					
	Brachycentridae	*Brachycentrus*		2	.6021	
		LEPTOCELLA	SP.	3	1.4314	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*	1		81
	Gerridae					
Coleoptera	Dytiscidae	*Agabus*				
	Elmidae					
Diptera	Simuliidae			2	.6021	
	Culicidae					
	Chironomidae	CHIRONOMUS	SP.	7	5.9157	
		ORTHOCLADIUS	SP	4	2.4082	
	Ceratopogonidae	GENUS A		4	2.4082	
		ATHERIX	VARIEGATA	1	295.6196	
			TOTAL	211		

Biologist _____ Total Number of Taxa 19

* one of very few taken - very early instar

$\bar{d} = 3.07$

MACROINVERTEBRATE LAB WORKSHEET

Station No. E-11 Sample No. 1 Sampling Method [illegible] Collection Date [illegible] Project NO. 1517

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	10	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis	*Tricaudatus (?)*	1	
		Ephemerella	[illegible]	13	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	4	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	[illegible]	2	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria	[illegible]	4	
		[illegible]	[illegible]	4	
		[illegible]	[illegible]	1	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
		[illegible]		2	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			2	
	Ceratopogonidae				
	[illegible]	[illegible]	[illegible]	1	
			TOTAL	51	

Biologist _____ Total Number of Taxa 12

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-4 Sample No. 2 Sampling Method Kick-screen Collection Date 11-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula* ≡ 7	7	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	~~EPHEMERUS~~ ?	13	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	3	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus* ide ?	~~FRONTALIS~~	2	
very small - most near		*Arcynopteryx*			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria	*fosketti*	1	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
		Rhyacophylax	sp	2	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		1	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae	Chironomus ?	Riparius ?	2	
		Orthocladius ?	sp	4	
	Ceratopogonidae			1	
			TOTAL	11	

Biologist _____ Total Number of Taxa 8

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. 4 Sample No. 3 Sampling Method SCREEN Collection Date JUL-17-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	1	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	= 17	17	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*			
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	8	65
		Acroneuria			
		Calineuria	*californica* ? 1	1	
			Sp. A 3*	3	
Trichoptera	Hydropsychidae	*Hydropsyche*			
		Arctopsyche	1	1	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
			TOTAL	31	

Biologist [signature] Total Number of Taxa 6

MACROINVERTEBRATE LAB WORKSHEET

Station No. F-41 Sample No. 4 Sampling Method Kicknet Collection Date III-17-76 Project NO. 1517-17

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	3	1
		Rhithrogena	*undulata*	2	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		11	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	2	45
	Libellulidae				
	Aeschnidae				
	Coenagrionidae			1	
Plecoptera	Perlodidae	*Isogenus*	*frontalis*	3	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
	Capniidae	*Acroneuria*			
		Capnia	*verrucalis* 3	3	
		C.	*Sp. A* 1	1	
	Taeniopterygidae	*Oemopteryx*	*Sp. A* 2	2	
Trichoptera	Hydropsychidae	*Hydropsyche*	2	2	
		Cheumatopsyche	3	3	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		1	1	
	Ceratopogonidae				
			TOTAL	42	

Biologist [signature] Total Number of Taxa 12

MACROINVERTEBRATE LAB WORKSHEET

Project NO. [illegible]

Station No. E-4 Sample No. 5 Sampling Method Kicknet Collection Date [illegible]

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*	7	1
		Rhithrogena	*undulata*		6
	Baetidae	*Baetis*	~~*bicaudatus*~~ sp.	1	15
		Callibaetis			
		Ephemerella	~~*inermis*~~	18	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*	3	45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*Frontalis*	1	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Oemoptenyx	*Fosketti*	2	
Trichoptera	Hydropsychidae	*Hydropsyche*			
		Cheumatopsyche	*sp*	2	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*		1	
	Leptoceridae	*Leptocella*	*sp*	3	
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae	*Chironomus*	*sp.*	2	
		Genus #1		4	
	Ceratopogonidae				
			TOTAL	45	

Biologist [signature] Total Number of Taxa 12

(Composite

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-5 Sample No. 1 Sampling Method SCREEN Collection Date III-19-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	65 117.8394	6
	Baetidae	*Baetis*	*bicaudatus*		15
			B. ERicaudatus (?)	3 1.4314	
		Callibaetis			
		Ephemerella		48 80.6996	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenoides*	*Frontalis*	25 34.9485	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	12 12.9502	65
		Acroneuria		4 2.4082	
		Oppia	*Vernalis*	3 1.4314	
Megaloptera	Corydalidae	*Corydalus*	sp. a	1 0	
Trichoptera	Hydropsychidae	*Hydropsyche*	*cognata* (?)	8 7.2247	
		Chevmatopsyche sp		27 38.6468	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae			1 0	
Diptera	Simuliidae			1 0	
	Culicidae				
	Chironomidae			5 3.4949	
				1 0	
	Ceratopogonidae			1 0	
		Gordius ?	sp	2 .6021	
		Hexatoma	sp	3 1.4314	
		Atherix	*Variegata*	1 0	
Empididae				1 0	
Syrphidae				1 0	
Anthomyidae				1 0	
		Limnodrilus sp.	TOTAL	1 0	
		Cyrnus sp		1 0	
Cyclorrapha pupae 25				2 0.6021	

Biologist _____ Total Number of Taxa _____

Σ 303.7827

218
221

$\bar{d} = 3.22$

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. E-5 Sample No. 1 Sampling Method Kick-net Collection Date 10-2-96

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata* 19	19	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella	~~*inermis*~~	4	
		Trichorythodes	*minutus*	23	36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*	*frontalis*	12	
		Arcynopteryx			
	Perlidae	*Taenionema* ?	~~*pacifica*~~ *sp.*	4	65
		Acroneuria			
		Capnia	*sp.* 1	1	
		c.	*Velofa*	1	
Trichoptera	Hydropsychidae	*Hydropsyche*			
		Cheumatopsyche	*sp* ~~+ +~~	12	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae	*Optioservus* ?	*sp* 1	1	
Diptera	Simuliidae				
	Culicidae				
	Chironomidae			1	
		Micropsectra	*sp* 1	1	
	Ceratopogonidae	*Atrichopogon*	*variegata*	1	
				1	
			TOTAL	68	

Biologist 1 Total Number of Taxa 12

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517

Station No. F-5 Sample No. 2 Sampling Method Kicksampler Collection Date III-19-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	5	6
	Baetidae	*Baetis*	*bicaudatus*		15
			bicaudatus (2)	1	
		Callibaetis			
		Ephemerella	EXEMI's (2)	20	
		Trichorythodes	*minutus*	29	36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus* (2)	Frontalis	4	
		Arcynopteryx			
	~~Perlidae~~	*Taenionema*	*pacifica*	6	65
		Acroneuria			
	Chloroperlidae	Neoperla	Sp. #1	1	
		Cepnia	Verna lis	1	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
		Hydropsyche sp.		5	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*	Case only		
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae		Sp. 2	3	
			Sp. 13	1	
	Ceratopogonidae				
		Cyrtella			
			TOTAL	51	

Biologist [signature] Total Number of Taxa 12

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-5 Sample No. 3 Sampling Method [illegible] Collection Date _____

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata* 7	7	6
	Baetidae	*Baetis*	*bicaudatus*		15
			B. tricaudatus (?)	1	
		Callibaetis			
		Ephemerella	HERMIT	2	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*	15	43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus* (Isogenoides)	Frontalis 3	3	
		Arcynopteryx			
	~~Perlidae~~	*Taenionema*	*pacifica* 1	1	65
		Acroneuria			
	Cyprinidae	Cyprinid	sp. 1	1	
			sp. 2	2	
Trichoptera	Hydropsychidae	*Hydropsyche*		1	
		Cheumatopsyche	sp. 7-8	8	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
	Syrphidae		1	1	
Amphipoda		Crustacea	Class Malacostraca	1	
			TOTAL	35	

Biologist _____ Total Number of Taxa 11

Also Leptocella and Cyprinid sp 2 adult

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-5 Sample No. 4 Sampling Method [illegible] Collection Date 11-19-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata* 2-6	20	6
	Baetidae	*Baetis*	*bicaudatus*		15
		Callibaetis			
		Ephemerella		10	
		Trichorythodes	*minutus*		36
		Lachlania			
		Traverella	*albertana*	30	27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus/ides* ?		5	
		Arcynopteryx		4	
	Perlidae	*Taenionema*	*pacifica*		65
		Acroneuria			
		Capnia		1	
		Corydalis	*cornuta* (?)	1	
Trichoptera	Hydropsychidae	*Hydropsyche*		4	
		[illegible]		2	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*			
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae				
	Culicidae				
	Chironomidae				
	Ceratopogonidae				
	[illegible]			1	
				1	
		[illegible]		1	
			TOTAL	50	

Biologist [illegible] Total Number of Taxa 11

* Megaloptera Corydalidae

Megaloptera Corydalidae

Corydalis cornuta taken

MACROINVERTEBRATE LAB WORKSHEET

Project NO. 1517-17

Station No. F-5 Sample No. 5 Sampling Method Screen Collection Date 11-19-76

ORDER	FAMILY	GENUS	SPECIES	NUMBER IN SAMPLE	CODE NO.
Ephemeroptera	Heptageniidae	*Heptagena*	*elegantula*		1
		Rhithrogena	*undulata*	11	6
	Baetidae	*Baetis*	*bicaudatus*		15
			RICOUE *Baetis*(?) *sp*	1	
		Callibaetis			
		Ephemerella	?	2	
		Trichorythodes	*minutus*	(19)	36
		Lachlania			
		Traverella	*albertana*		27
Odonata	Gomphidae	*Gomphus*	*intricatus*		43
		Ophiogomphus	*severus*		45
	Libellulidae				
	Aeschnidae				
Plecoptera	Perlodidae	*Isogenus*		1	
		Arcynopteryx			
	Perlidae	*Taenionema*	*pacifica*	1	65
		Acroneuria			
Trichoptera	Hydropsychidae	*Hydropsyche*	2	2	
	Limnephilidae				
	Brachycentridae	*Brachycentrus*	CASE		
	Leptoceridae	*Leptocella*	CASE		
Hemiptera	Mesoveliidae	*Mesovelia*	*mulsanti*		81
	Gerridae				
Coleoptera	Dytiscidae	*Agabus*			
	Elmidae				
Diptera	Simuliidae			1	
	Culicidae				
	Chironomidae			1	
Cyclorrhapha pupa				1	
	Ceratopogonidae	TABANIDA(?)	sp	1	
Tipulidae		HELATINA(?)	sp	1	
Hemerodromia		CERIUS ?	sp	1	
			TOTAL	29	

Biologist [signature] Total Number of Taxa 12

C. MICROBIOLOGY

APPENDIX

DIPTERA

SARCOPHAGIDAE - R.J. Gagne

Ravinia inerminiae R.-Desvoidy
Ravinia planifrons Calderwood

Blaesoxipha eleodis (Aldrich)
Blaesoxipha sp. nr.*garia* (Aldrich_
Blaesoxipha opifera (Coquillett)
Blaesoxipha hunteri (Hough)

Sarcophaga bishoppi Aldrich
Sarcophaga bullata Parker
Sarcophaga sp. #1
Sarcophaga sp. #2
Sarcophaga sp. #4

Wohlfahrtia vigil (Walker)

Helicobia rapax (Walker)
Taxigramma heteroneura (Meigen)

Opsidis oblata (Townsend)

Eumachronychia montana Allen

Sphenometopa terpta (Coquillett)
Amobiz floridensis (Townsend)

Metopia argyrocephala (Meigen)

Hilarella hilarella (Zetterstadt)

Phrosinella pilosifrons Allen

Gymnoprosopa pallida Allen

Ptychoneura aristalis (Coquillett)

Senotainia rubriventris Macquaert
Senotainia trilineata Wulp
Senotainia sp. nr. *trilineata* Wulp
Senotainia flavicornis Townsend

CALLIPHORIDAE - R.J. Gagne

Phaenicia sericata (Meigen)

Phormia regina (Meigen)

Bufolucilia rhetuna (Shen.)

Calliphora coloradensis Hough

MUSCIDAE - R.J. Gagne

Muscina assimilis (Fallen)
Muscina fulracrura Snyder

Schoenomyza dorsalis Loew

Tetramerinx parvimaculata (Stein)

Lispe polita (Coquillett)
Lispe masoni Stein
Lispe sociabilis Loew

Limosia sp. #1

Coenosia sp. #1

Myospila meditabunda (Fabricius)

Quadrularia laetifica (R. Desvoidy)

Hydrotaea militaris (Meigen)

Spilogona argentiventris (Malloch)
Spilogona sp. #1

Helina nigripennis (Walker)
Helina croene (Walker)

Haematobia irritans (Linnaeus)

Musca domestica Linnaeus

Orthellia caesarian (Meigen)

Fannia canicularis (Linnaeus)

Fannia sp. #1

ANTHOMYIDAE - D.G. Stryskal

Pegomya acutipennis Malloch
Pegomya sp. #1
Pegomya sp. #2
Pegomya sp. #3
Pegomya sp. #4
Pegomya sp. #5
Pegomya sp. #6

Hylemya normalis Malloch
Hylemya concorda Huckett
Mylemya platura (Meigen)
Mylemya setiventris Gr.
Hylemya neomexicana Malloch
Hylemya cinerella Fallen

Leucophora cinerea R.-Desvoidy
Leucophora maculata (Stein)

Calythea micropterx Thomson

Pseudoleria sp. #1

Hydrophoria divisa (Meigen)

Pherbellia humilis (Loew)

Cordilura latifrons Loew

Scatophaga stercoraria (Linnaeus)

TACHINIDAE - Curtis Sabrosky

Peleteria sp. #1
Peleteria sp. #2

Deopalpus hirsutus Townsend

Bonnetia comta (Fallen)

Stomatomyia parvipalpis Williston

Goniochaeta plagioides Townsend

Exorista sp. #1

Spoggosia sp. #1

Ceracia dentata (Coguillett)

Acemya sp. #1

Chactonodexodes vanderwulpi (Townsend)

Exoristoides johnsoni Coquillett

Voria ruralis (Fallen)

Spathidexia sp. #1

Micromintha melania Townsend

Periscepsia helymus (Walker)
Periscepsia laevitata Wulp.
Periscepsia cinerosa (Coquillett)

Meigenielloides cinereus Townsend

Sitophaga sp. nr. *lateralis* (Curran)
Sitophaga sp. nr. *mutabilis* (Coquillett)

Medina barbata (Coquillett)

Oxynops anthracinus (Bigot)

Procatharosia sp. #1

Reinhardiana petiolata (Townsend)

Gymnosoma filiola Loew
Gymnosoma occidentale Curran
Gymnosoma fuliginosa R.-Desvoidy

Xanthomelanodes californica Townsend

Cylindromyia californica (Bigot)

Hyalomyia aldrichii Townsend

Pararchytas decisus (Walker)

Norwickia sp. #1
Norwickia sp. #2
Norwickia sp. #3
Norwickia sp. #4

Metopotachina n. sp. #1

Microphthalma disjuncta (Wiedeman)

Promasiphaga confusa (Aldrich)

Gonia sp. #1
Gonia sp. #2
Gonia sp. #3
Gonia sp. #4

Spallanzania hebes (Fallen)
Acroglossa finitima (Snow)

Chaetogaedia townsendi Sabr. & Am.

Pseudoperichaeta erecta (Coquillett)

Madremyia saundersi (Willeston)

Lixophaga sp. #1

Schizactia vitinervis (Thomson)

Elfia usitata (Coquillett)
Elfia n. sp. #1
Elfia sp. #2
Elfia sp. nr. *curriei* (Townsend)

Drepanoglossa lucens Townsend

Phantasiomyia atripes (Coquillett)
Phantasiomyia gracilis Townsend

Leucostoma simplex (Fallen)

Microchaetina sp. nr.*valida* Townsend
Microchaetina sp. #1

Paradidyma singularis Townsend
Paradidyma obliqua Reinhardt
Paradidyma sp. nr. *retracta* Reinhardt
Paradidyma sp. #1

Aplomya confusionis Sellers

Catagomopsis sp. #1

Clausicella setigera (Coquillett)
Clausicella sp. #1

Gen. #1 sp. #1 (Ericiini)

HYMENOPTERA

BRACONIDAE - Paul Marsh

Chelonus (Chelonus) sericeus Say
Chelonus (Chelonus) sp. #1
Chelonus (Chelonus) sp. #2
Chelonus (Chelonus) sp. #3
Chelonus (Chelonus) sp. #4
Chelonus (Microchelonus) sp. #4
Chelonus (Microchelonus) sp. #6
Chelonus (Microchelonus) sp. #7
Chelonus (Microchelonus) sp. #8
Chelonus (Microchelonus) sp. #9
Chelonus (Microchelonus) sp. #10
Chelonus (Microchelonus) ?hurdi McComb
Chelonus (Microchelonus

Iphiaulax sp. #1
Iphiaulax sp. #2
Iphiaulax sp. #3

Cardiochiles rubicundus Mao

Crassomicrodus fluvescens (Cresson)

Cremnops californicus (Morrison)

Agathis nigripes (Cresson)
Agathis atripes (Cresson)
Agathis brevicornis Muesebeck
Agathis gibbosa Say
Agathis sp. #1
Agathis sp. #2
Agathis sp. #3
Agathis sp. #4

Bracon erucarum (Cushman)
Bracon gelechiae Ashmead
Bracon hyslopi (Viereck)
Bracon meromyzae Gahan
Bracon sp. #5
Bracon sp. #6
Bracon sp. #8
Bracon sp. #9
Bracon sp. #10
Bracon sp. #11

Microctonus eleodes Viereck

Mirax sp. #1

Lysaphidus ramithyrus (Smith)

Trioxys bonnevillensis Smith

Lysiphlebus testaceipes (Cresson)
Lysiphlebus utahensis (Smith)

Meteorus leviventris (Wesmael)

Orthostigma sp. #1

Choribidella sp. #1

Coelinidea sp. #1

Hormius sp. #1
Hormius sp. #1
Hormius sp. #3
Hormius sp. #4

Rhysipolis sp. #1

Rogas scrutator (Say)
Rogas sp. #2

Tetrasphaeropyx sp. #2

Gnaptodon nepticulae (Rah.)

Elasmosoma sp. #1

Microplitis croceipes (Cresson)
Microplitis varicolor Viereck

Microgaster sp. #1

Rhaconotus cressoni M. and W.

Microtypus sp. #1
Microtypus sp. #2
Microtypus sp. #3

Blacus sp. #2

Brachystropha sp. #1
Brachystropha sp. #2

Orgilis impiger Mues.

Parahormius pallidipes (Ashmead)

Opius sp. nr. *chewancanus* Fischer
Opius sp. nr. *irregularis* Wesmael
Opius sp. #2
Opius sp. #4
Opius sp. #6

Chorebus sp. #1

D. VEGETATION

TABLE 1.

Plant Phenology Key

1. Winter dormancy
2. Spring growth (Veg.)
3. Summer leaves
4. Winter leaves
5. Leaves (decidious)
6. Flower initiation
7. Full flower
8. Seed dissemination complete
9. Summer dormancy
10. Summer vegetative regrowth
11. Insect damage
12. Abnormal senescence
13. Seeds nearing maturity
14. Fall leaf senescence
15. Tight flower bud stage
16. Seed stalk elongation complete
17. Coloration (gain color)
18. Discoloration (losing color)
19. Flowers opening from buds
20. Flowering complete - drying up
21. Soft dough stage
22. Livestock utilization

TABLE 2.

Phenological condition of plant species
within four vegetation types at several dates

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
9/27/74	Sagebrush-Greasewood	ARTNOV	100	3. Summer leaves
"	"	ARTNOV	10	14. Fall leaf senescence
"	"	ARTNOV	85	15. Tight flower bud
"	"	ARTNOV	100	16. Seed stalk elongation
"	"	ARTNOV	14	19. Flowers opening
"	"	ARTTRI	100	3. Summer leaves
"	"	ARTTRI	5	14. Fall leaf senescence
"	"	ARTTRI	100	15. Tight flower bud
"	"	ARTTRI	100	16. Seed stalk elongation
"	"	ATRCON	100	3. Summer leaves
"	"	ATRCON	65	13. Seed near maturity
"	"	ATRCON	10	14. Fall leaf senescence
"	"	ATRCON	100	16. Seed stalk elongation
"	"	CHRGRE	95	14. Fall leaf senescence
"	"	CHRGRE	100	15. Tight flower bud
"	"	ERIOGO	100	3. Summer leaves
"	"	ERIOGO	15	7. Full flower
"	"	ERIOGO	50	14. Fall leaf senescence
"	"	ERIOGO	85	19. Flowers opening
"	"	EURLAN	20	14. Fall leaf senescence
"	"	EURLAN	100	15. Tight flower bud

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
9/27/74	Sagebrush-Greasewood	EURLAN	100	16. Seed stalk elongation
"	"	GRASPI	100	9. Summer dormancy
"	"	GUTSAR	100	3. Summer leaves
"	"	GUTSAR	5	14. Fall leaf senescence
"	"	GUTSAR	100	19. Flowers opening
"	"	OPUNTI	100	9. Summer dormancy
"	"	ORYHYM	100	8. Seed dissemination
"	"	ORYHYM	100	9. Summer dormancy
"	"	ORYHYM	85	17. Coloration (gain)
"	"	SALKAL	100	17. Coloration (gain)
"	"	SALKAL	100	20. Flowering complete
"	"	SARVER	100	3. Summer leaves
"	"	SARVER	20	14. Fall leaf senescence
"	"	SARVER	0	16. Seed stalk elongation
"	"	SARVER	100	20. Flowering complete
"	"	STICOM	100	8. Seed dissemination
"	"	STICOM	100	9. Summer dormancy
"	"	STICOM	40	17. Coloration (gain)
"	"	STICOM	70	18. Discoloration
"	Juniper	AGRSMI	15	8. Seed dissemination
"	"	AGRSMI	100	16. Seed stalk elongation
"	"	AGRSMI	75	17. Coloration (gain)
"	"	ARTNOV	100	3. Summer leaves
"	"	ARTNOV	20	14. Fall leaf senescence
"	"	ARTNOV	73	15. Tight flower bud
"	"	ARTNOV	75	16. Seed stalk elongation

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
9/27/74	Juniper	ATRNOV	65	19. Flowers opening
"	"	ATRCON	100	3. Summer leaves
"	"	ATRCON	55	13. Seed near maturity
"	"	ATRCON	30	14. Fall leaf senescence
"	"	ATRCON	100	16. Seed stalk elongation
"	"	CHRGRE	100	3. Summer leaves
"	"	CHRGRE	28	14. Fall leaf senescence
"	"	CHRGRE	0	16. Seed stalk elongation
"	"	CHRNAU	100	3. Summer leaves
"	"	CHRNAU	100	8. Seed dissemination
"	"	CHRNAU	100	14. Fall leaf senescence
"	"	CRYPTA	100	8. Seed dissemination
"	"	CRYPTA	40	14. Fall leaf senescence
"	"	CRYPTA	100	16. Seed stalk elongation
"	"	CRYPTA	100	20. Flowering complete
"	"	ERIOGO	85	7. Full flower
"	"	ERIOGO	80	14. Fall leaf senescence
"	"	GUTSAR	100	3. Summer leaves
"	"	GUTSAR	60	7. Full flower
"	"	GUTSAR	15	14. Fall leaf senescence
"	"	GUTSAR	85	15. Tight flower bud
"	"	HILJAM	100	8. seed dissemination
"	"	HILJAM	100	17. Coloration (gain)
"	"	JUNOST	100	9. Summer dormancy
"	"	SITHYS	100	8. Seed dissemination
"	"	SITHYS	100	17. Coloration (gain)

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
9/27/74	Juniper	SOLRIG	30	14. Fall leaf senescence
"	"	SOLRIG	100	16. Seed stalk elongation
"	"	SOLRIG	60	20. Flowering complete
"	Shadscale	ARTNOV	100	3. Summer leaves
"	"	ARTNOV	98	15. Tight flower bud
"	"	ARTNOV	100	16. Seed stalk elongation
"	"	ARTNOV	90	19. Flowers opening
"	"	ARTTRI	100	3. Summer leaves
"	"	ARTTRI	10	14. Fall leaf senescence
"	"	ARTTRI	100	15. Tight flower bud
"	"	ARTTRI	100	16. Seed stalk elongation
"	"	ARTTRI	35	19. Flowers opening
"	"	ASTSPP	20	8. Seed dissemination
"	"	ASTSPP	80	14. Fall leaf senescence
"	"	ASTSPP	100	20. Flowering complete
"	"	ATRCON	100	3. Summer leaves
"	"	ATRCON	60	13. Seed near maturity
"	"	ATRCON	20	14. Fall leaf senescence
"	"	CHRNAU	100	3. Summer leaves
"	"	CHRNAU	50	7. Full flower
"	"	CHRNAU	45	14. Fall leaf senescence
"	"	CHRNAU	50	20. Flowering complete
"	"	ERIMIC	60	7. Ful flower
"	"	ERIMIC	40	13. Seed near maturity
"	"	ERIMIC	20	14. Fall leaf senescence
"	"	GUTSAR	100	3. Summer leaves

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
9/27/74	Shadscale	GUTSAR	100	6. Flower initiation
"	"	GUTSAR	80	7. Full flower
"	"	GUTSAR	43	14. Fall leaf senescence
"	"	GUTSAR	100	15. Tight flower bud
"	"	HALGLO	100	13. Seed near maturity
"	"	HALGLO	100	17. Coloration (gain)
"	"	HILJAM	100	8. Seed dissemination
"	"	HILJAM	100	9. Summer dormancy
"	"	HILJAM	100	17. Coloration (gain)
"	"	OPUNTI	100	9. Summer dormancy
"	"	ORYHYM	90	8. Seed dissemination
"	"	ORYHYM	55	18. Discoloration
"	"	SARVER	100	3. Summer leaves
"	"	SARVER	75	14. Fall leaf senescence
"	"	SITHYS	100	8. Seed dissemination
"	"	SITHYS	100	17. Coloration (gain)
"	"	SPHCOC	40	18. Discoloration
"	"	TETSPI	100	9. Summer dormancy
"	Riparian	AGRSMF	70	13. Seed near maturity
"	"	AGRSMF	80	17. Coloration (gain)
"	"	ARTTRI	100	3. Summer leaves
"	"	ARTTRI	50	7. Full flower
"	"	ARTTRI	20	14. Fall leaf senescence
"	"	ARTTRI	100	16. Seed stalk elongation
"	"	CHRNAU	100	3. Summer leaves

Table 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
9/27/74	Riparian	CHRNAU	100	7. Full flower
"	"	CHRNAU	75	21. Soft dough stage
"	"	CHRVIS	100	3. Summer leaves
"	"	CHRVIS	20	14. Fall leaf senescence
"	"	ELYCIN	80	8. Seed dissemination
"	"	ELYCIN	100	13. Seed near maturity
"	"	ELYCIN	100	17. Coloration (gain)
"	"	MELOFF	75	14. Fall leaf senescence
"	"	SALEXI	100	2. Spring growth (veg)
"	"	SALEXI	100	8. Seed dissemination
"	"	SALEXI	5	14. Fall leaf senescence
"	"	SALEXI	100	20. Flowering complete
"	"	SALKAL	80	13. Seed near maturity
"	"	SALKAL	100	17. Coloration (gain)
"	"	SALKAL	20	20. Flowering complete
"	"	TAMPEN	100	7. Full flower
"	"	TAMPEN	65	14. Fall leaf senescence
"	"	TAMPEN	65	18. Discoloration
"	"	TAMPEN	10	20. Flowering complete
3/7/75	Sagebrush-Greasewood	ARTNOV	100	1. Winter dormancy
"	"	ARTTRI	100	1. Winter dormancy
"	"	ATRCON	100	1. Winter dormancy
"	"	CHRGRE	100	1. Winter dormancy
"	"	GRASPI	100	1. Winter dormancy
"	"	ORYHYM	100	1. Winter dormancy
"	"	SARVER	100	1. Winter dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
3/7/75	Sagebrush-Greasewood	STICOM	100	1. Winter dormancy
3/7/75	Juniper	ARTNOV	100	1. Winter dormancy
"	"	ARTNOV	5	22. Livestock Utilization
"	"	ATRCON	100	1. Winter dormancy
"	"	CHRGRE	100	1. Winter dormancy
"	"	CHRNAU	100	1. Winter dormancy
"	"	JUNOST	100	1. Winter dormancy
"	"	SOLRIG	30	2. Spring growth (veg)
"	"	STICOM	100	1. Winter dormancy
"	Shadscale	ARTNOV	100	1. Winter dormancy
"	"	ARTNOV	5	22. Livestock utilization
"	"	ATRCON	100	1. Winter Dormancy
"	"	CHRNAU	100	1. winter dormancy
"	"	ERIMIC	100	1. winter dormancy
"	"	LEPWAT	60	2. spring growth (veg)
"	"	ORYHYM	100	1. winter dormancy
"	"	SARVER	100	1. winter dormancy
"	"	STICOM	100	1. winter dormancy
"	"	TETSPI	100	1. winter dormancy
"	Riparian	ARTTRI	100	1. winter dormancy
"	"	CHRNAU	100	1. winter dormancy
"	"	CHRVIS	100	1. winter dormancy
"	"	POAPRA	100	1. winter dormancy
"	"	POPFRE	100	1. winter dormancy
"	"	SALEXI	100	1. winter dormancy
"	"	TAMPEN	100	1. winter dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
4/15/75	Sagebrush-Greasewood	ARTNOV	60	2. Spring growth (veg)
"	"	ARTTRI	30	2. Spring growth (veg)
"	"	ATRCON	60	2. spring growth (veg
"	"	BROTEC	80	2. spring growth (veg)
"	"	CHRGRE	40	2. spring growth (veg)
"	"	EURLAN	100	2. spring growth (veg)
"	"	GRASPI	73	2. spring growth (veg)
"	"	GUTSAR	50	2. spring growth (veg)
"	"	SALKAL	80	2. spring growth (veg)
"	"	SARVER	63	1. winter dormancy
"	"	SARVER	23	2. spring growth (veg)
"	"	STICOM	10	2. spring growth (veg)
"	"	TETSPI	60	2. spring growth (veg)
"	Juniper	AGRSMI	95	1. winter dormancy
"	"	ARTNOV	35	2. spring growth (veg)
"	"	ATRCON	60	1. winter dormancy
"	"	ATRCON	35	2. spring growth (veg)
"	"	CHRGRE	85	2. spring growth (veg)
"	"	CHRNAU	65	2. spring growth (veg)
"	"	ERIOGO	80	2. spring growth (veg)
"	"	GUTSAR	90	2. spring growth (veg)
"	"	HILJAM	90	1. winter dormancy
"	"	JUNOST	34	2. spring growth (veg)
"	"	ORYHYM	100	1. winter dormancy
"	"	SOLRIG	80	2. spring growth (veg)
"	Shadscale	ARTNOV	35	1. winter dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
4/15/75	Shadscale	ARTNOV	40	2. spring growth (veg)
"	"	ARTTRI	20	1. winter dormancy
"	"	ARTTRI	65	2. spring growth (veg)
"	"	ATRCON	50	1. winter dormancy
"	"	ATRCON	38	2. spring growth (veg)
"	"	CHRNAU	70	2. spring growth (veg)
"	"	ERIMIC	80	2. spring growth (veg)
"	"	GUTSAR	85	2. spring growth (veg)
"	"	HILJAM	100	1. winter dormancy
"	"	ORYHYM	100	1. winter dormancy
"	"	SARVER	70	1. winter dormancy
"	"	SARVER	20	2. spring growth (veg)
"	"	SPHCOC	80	2. spring growth (veg)
"	"	TETSPI	95	2. spring growth (veg)
"	Riparian	ARTTRI	60	1. winter dormancy
"	"	ARTTRI	40	2. spring growth (veg)
"	"	BROTEC	80	2. spring growth (veg)
"	"	CHRNAU	46	2. spring growth (veg)
"	"	POPFRE	60	2. spring growth (veg)
"	"	SALEXI	100	1. winter dormancy
"	"	TAMPEN	100	1. winter dormancy
5/14/75	Sagebrush-Greasewood	ARTNOV	100	3. summer leaves
"	"	ARTTRI	100	2. spring growth (veg)
"	"	ARTTRI	100	3. summer leaves
"	"	ASTRAG	100	5. leaves (decidious)

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
5/14/75	Sagebrush-Greasewood	ASTRAG	100	7. full flower
"	"	ATRCON	100	2. spring growth (veg)
"	"	ATRCON	100	3. summer leaves
"	"	BROTEC	100	2. spring growth (veg)
"	"	BROTEC	100	5. leaves (decidious)
"	"	CHRGRE	100	5. leaves (decidious)
"	"	ERIOGO	100	5. leaves (decidious)
"	"	EURLAN	100	2. spring growth (veg)
"	"	EURLAN	100	5. leaves (decidious)
"	"	GRASPI	100	2. spring growth (veg)
"	"	GRASPI	100	6. flower initiation
"	"	GRASPI	100	5. leaves (decidious)
"	"	GUTSAR	100	5. leaves (decidious)
"	"	HALGLO	100	2. spring growth (veg)
"	"	ORYHYM	100	5. leaves (decidious)
"	"	SALKAL	100	2. spring growth (veg)
"	"	SARVER	20	2. spring growth (veg)
"	"	SARVER	100	5. leaves (decidious)
"	"	STICOM	100	2. spring growth (veg)
"	"	STICOM	100	5. leaves (decidious)
"	Juniper	AGRSMI	100	5. leaves (decidious)
"	"	ARTNOV	100	3. summer leaves
"	"	ARTNOV	100	5. leaves (decidious)
"	"	ASTRAG	100	2. spring growth (veg)
"	"	ASTRAG	100	5. leaves (decidious)
"	"	ASTRAG	100	6. flower initiation
"	"	ATRCON	100	3. summer leaves
"	"	ATRCON	100	6. flower initiation
"	"	CHRGRE	100	5. leaves (decidious)

TABLE 2 (continued)

Date	Vegetation type	Species	Percent in Condition	Phenological Condition
5/14/75	Juniper	CHRNAU	100	5. leaves (decidious)
"	"	CHRNAU	100	6. flower initiation
"	"	CRUCIF	100	5. leaves (decidious)
"	"	CRUCIF	100	6. flower initiation
"	"	CRYPTA	100	5. leaves (decidious)
"	"	CRYPTA	100	6. flower initiation
"	"	ERIOGO	100	5. leaves (decidious)
"	"	EUPHOR	100	5. leaves (decidious)
"	"	GUTSAR	100	5. leaves (decidious)
"	"	HILJAM	100	5. leaves (decidious)
"	"	JUNOST	100	3. summer leaves
"	"	SOLRIG	100	5. leaves (decidious)
"	"	SPHCOC	100	5. leaves (decidious)
"	"	SPHCOC	100	6. flower initiation
"	Shadscale	AGRSMI	100	5. leaves (decidious)
"	"	ALLIUM	100	5. leaves (decidious)
"	"	ALLIUM	100	6. flower initiation
"	"	ARTNOV	100	3. summer leaves
"	"	ARTSPI	100	3. summer leaves
"	"	ARTSPI	100	6. flower initiation
"	"	ATRCON	98	2. spring growth (veg)
"	"	ATRCON	100	3. summer leaves
"	"	ATRCON	44	6. flower initiation
"	"	BROTEC	100	5. leaves (decidious)
"	"	CHRNAU	100	5. leaves (decidious)
"	"	CRUCIF	100	2. spring growth (veg)

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
5/14/75	Shadscale	CRUCIF	100	2. spring growth (veg)
"	"	CRUCIF	100	5. leaves (decidious)
"	"	CRUCIF	100	6. flower initiation
"	"	ERIMIC	100	5. leaves (decidious)
"	"	GUTSAR	100	5. leaves (decidious)
"	"	HILJAM	100	5. leaves (decidious)
"	"	OPUNTI	100	9. summer dormancy
"	"	ORYHYM	100	5. leaves (decidious)
"	"	SARVER	100	5. leaves (decidious)
"	"	SPHCOC	100	5. leaves decidious)
"	"	SPHCOC	50	6. flower initiation
"	"	TETSPI	100	5. leaves (decidious)
"	"	TETSPI	100	6. flower initiation
"	"	UMBELL	100	5. leaves (decidious)
"	"	UMBELL	75	6. flower initiation
"	Riparian	AGRSMI	100	5. leaves (decidious)
"	"	ARTTRI	100	2. spring growth (veg)
"	"	ARTTRI	100	3. summer leaves
"	"	BROTEC	100	5. leaves (decidious)
"	"	BROTEC	100	6. flower initiation
"	"	CHRNAU	100	5. leaves (decidious)
"	"	CHRVIS	100	5. leaves (decidious)
"	"	CRUCIF	100	5. leaves (decidious)
"	"	CRUCIF	100	6. flower initiation
"	"	MELOFF	100	5. leaves (decidious)
"	"	POPFRE	100	5. leaves (decidious)

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
5/14/75	Riparian	POPFRE	100	6. flower initiation
"	"	SALEXI	100	1. winter dormancy
"	"	SALKAL	100	5. leaves (decidious)
6/25/75	Sagebrush-Greasewood	ARTNOV	100	16. seed stalk elongation
"	"	ARTTRI	50	10. summer regrowth
"	"	ARTTRI	75	16. seed stalk elongation
"	"	ATRCON	100	10. summer regrowth
"	"	BROTEC	100	9. summer dormancy
"	"	CHRGRE	100	10. summer regrowth
"	"	CLELUT	100	7. full flower
"	"	ERIOGO	100	2. spring growth (veg)
"	"	EURLAN	100	10. summer regrowth
"	"	GRASPI	60	7. full flower
"	"	GRASPI	90	10. summer regrowth
"	"	GUTSAR	100	10. summer regrowth
"	"	OPUNTI	100	13. seed near maturity
"	"	ORYHYM	100	13. seed near maturity
"	"	SALKAL	100	9. summer dormancy
"	"	SARVER	100	10. summer regrowth
"	"	STICOM	100	13. seed near maturity
"	Juniper	AGRSMI	100	2. spring growth (veg)
"	"	AGRSMI	100	13. seed near maturity
"	"	ARTNOV	97	16. seed stalk elongation
"	"	ASTRAG	60	10. summer regrowth
"	"	ASTRAG	100	13. seed near maturity
"	"	ASTSPP	100	7. full flower

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
6/25/75	Juniper	ATRCON	100	10. summer regrowth
"	"	CHRGRE	100	10. summer regrowth
"	"	CHRNAU	100	7. full flower
"	"	CHRNAU	100	10. summer regrowth
"	"	ERIOGO	100	2. spring growth (veg)
"	"	ERIOGO	100	7. full flower
"	"	GUTSAR	100	10. summer regrowth
"	"	HILJAM	100	13. seed near maturity
"	"	JUNOST	100	9. summer dormancy
"	"	JUNOST	100	10. summer regrowth
"	"	JUNOST	100	13. seed near maturity
"	"	ORYHYM	100	13. seed near maturity
"	"	SOLRIG	100	7. full flower
"	Shadscale	ARTNOV	83	3. summer leaves
"	"	ARTTRI	100	3. summer leaves
"	"	ATRCON	100	9. summer dormancy
"	"	BROTEC	100	9. summer dormancy
"	"	CHRNAU	100	9. summer dormancy
"	"	ERIMIC	100	9. summer dormancy
"	"	ERIOGO	100	9. summer dormancy
"	"	GUTSAR	100	9. summer dormancy
"	"	GUTSAR	100	3. summer leaves
"	"	HILJAM	75	3. summer leaves
"	"	OPUNTI	100	9. summer dormancy
"	"	ORYHYM	100	3. summer leaves
"	"	SARVER	100	9. summer dormancy

TABLE 2 (continued)

Date	Vegetation type	Species	Percent in Condition	Phenological Condition
6/25/75	Shadscale	TETSPI	100	9. summer dormancy
"	Riparian	AGRSMI	100	10. summer regrowth
"	"	BROTEC	100	9. summer dormancy
"	"	CHRNAU	100	10. summer regrowth
"	"	CHRVIS	100	10. summer regrowth
"	"	MELOFF	100	10. summer regrowth
"	"	POPFRE	100	10. summer regrowth
"	"	SALEXI	100	10. summer regrowth
"	"	STICOM	100	10. summer regrowth
"	"	TAMPEN	100	10. summer regrowth
8/18/75	Sagebrush-Greasewood	ARTNOV	100	9. summer dormancy
"	"	ARTTRI	100	9. summer dormancy
"	"	ASTRAG	100	9. summer dormancy
"	"	ASTSPP	90	7. full flower
"	"	ATRCON	100	9. summer dormancy
"	"	BROTEC	100	9. summer dormancy
"	"	CHRGRE	50	7. full flower
"	"	CHRGRE	100	19. flowers opening
"	"	CLELUT	100	20. flowering complete
"	"	ERIOGO	100	7. full flower
"	"	ERIOGO	100	14. fall leaf senescence
"	"	GRASPI	100	14. fall leaf senescence
"	"	GUTSAR	80	7. full flower
"	"	OPUNTI	100	9. summer dormancy
"	"	ORYHYM	100	8. seed dissemination
"	"	SALKAL	100	9. summer dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
8/18/75	Sagebrush-Greasewood	SARVER	100	8. seed dissemination
"	"	SARVER	100	9. summer dormancy
"	"	STICOM	100	8. seed dissemination
"	Juniper	AGRSMI	100	13. seed near maturity
"	"	ARTNOV	100	9. summer dormancy
"	"	ASTRAG	100	8. seed dissemination
"	"	ASTSPP	100	20. flowering complete
"	"	ATRCON	100	9. summer dormancy
"	"	CHRGRE	100	7. full flower
"	"	CHRNAU	100	7. full flower
"	"	CHRNAU	100	9. summer dormancy
"	"	CRYPTA	100	9. summer dormancy
"	"	ERIOGO	.90	7. full flower
"	"	HILJAM	100	8. seed dissemination
"	"	JUNOST	100	9. summer dormancy
"	"	ORYHYM	.90	8. seed dissemination
"	"	SOLRIG	100	7. full flower
"	Shadscale	ARTNOV	100	9. summer dormancy
"	"	ARTTRI	100	9. summer dormancy
"	"	ASTSPP	88	20. flowering complete
"	"	ATRCON	100	9. summer dormancy
"	"	BROTEC	100	9. summer dormancy
"	"	CHRNAU	100	6. flower initiation
"	"	ERIMIC	90	6. flower initiation
"	"	ERIOGO	100	8. seed dissemination
"	"	ERIOGO	100	9. summer dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
8/18/75	Shadscale	GUTSAR	100	9. summer dormancy
"	"	HALGLO	100	3. summer leaves
"	"	HILJAM	100	8. seed dissemination
"	"	OPUNTI	100	9. summer dormancy
"	"	ORYHYM	100	8. seed dissemination
"	"	SARVER	100	9. summer dormancy
"	"	SITHYS	100	9. summer dormancy
"	"	TETSPI	100	9. summer dormancy
"	Riparian	AGRSMI	100	13. seed near maturity
"	"	BROTEC	100	9. summer dormancy
"	"	CHRVIS	100	9. summer dormancy
"	"	CRYPTA	100	7. full flower
"	"	MELOFF	100	10. summer regrowth
"	"	POPFRE	100	5. leaves (decidious)
"	"	SALEXI	100	10. summer regrowth
"	"	STICOM	100	10. summer regrowth
"	"	TAMPEN	100	9. summer dormancy
"	"	TAMPEN	100	10. summer regrowth
10/25/75	Sagebrush-Greasewood	ARTNOV	100	1. winter dormancy
"	"	ARTTRI	100	1. winter dormancy
"	"	ARTTRI	100	14. Fall leaf senescence
"	"	ATRCON	100	14. fall leaf senescence
"	"	BROTEC	100	1. winter dormancy
"	"	CHRGRE	100	1. winter dormancy
"	"	ERIGER	100	1. winter dormancy
"	"	GRASPI	100	1. winter dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
10/25/75	Sagebrush-greasewood	GUTSAR	100	1. winter dormancy
"	"	ORYHYM	100	1. winter dormancy
"	"	SALKAL	0	1. winter dormancy
"	"	SARVER	100	1. winter dormancy
"	"	STICOM	100	1. winter dormancy
"	Juniper	AGRSMI	100	1. winter dormancy
"	"	ARTNOV	100	1. winter dormancy
"	"	ARTNOV	50	8. seed dissemination
"	"	ASTRAG	100	1. winter dormancy
"	"	ASTSPP	100	1. winter dormancy
"	"	ATRCON	100	1. winter dormancy
"	"	CHRGRE	100	1. winter dormancy
"	"	CHRNAU	100	1. winter dormancy
"	"	ERIOGO	100	1. winter dormancy
"	"	EURLAN	100	1. winter dormancy
"	"	GUTSAR	100	1. winter dormancy
"	"	HILJAM	100	1. winter dormancy
"	"	JUNOST	100	1. winter dormancy
"	"	ORYHYM	100	1. winter dormancy
"	"	SOLRIG	100	1. winter dormancy
"	Shadscale	ARTNOV	100	1. winter dormancy
"	"	ARTNOV	50	8. seed dissemination
"	"	ARTTRI	83	1. winter dormancy
"	"	ARTTRI	50	8. seed dissemination
"	"	ASTSPP	100	1. winter dormancy
"	"	ATRCON	50	1. winter dormancy

TABLE 2 (continued)

Date	Vegetation Type	Species	Percent in Condition	Phenological Condition
10/25/75	Shadscale	ATRCON	90	14. Fall leaf senescence
"	"	BROTEC	100	1. winter dormancy
"	"	CHRGRE	100	1. winter dormancy
"	"	ERIOGO	100	1. winter dormancy
"	"	GUTSAR	100	1. winter dormancy
"	"	HILJAM	100	1. winter dormancy
"	"	OPUNTI	100	1. winter dormancy
"	"	ORYHYM	100	1. winter dormancy
"	"	SARVER	100	1. winter dormancy
"	"	STICOM	100	1. winter dormancy
"	"	TETGLA	100	1. winter dormancy
"	Riparian	AGROPY	20	1. winter dormancy
"	"	ARTTRI	100	1. winter dormancy
"	"	BROTEC	100	1. winter dormancy
"	"	CHRNAU	100	1. winter dormancy
"	"	CHRNAU	80	14. fall leaf senescence
"	"	CHRNAU	100	20. flowering complete
"	"	CHRVIS	100	14. fall leaf senescence
"	"	POPFRE	100	14. fall leaf senescence
"	"	SALEXI	90	14. fall leaf senescence
"	"	SALKAL	100	1. winter dormancy
"	"	TAMPEN	100	1. winter dormancy

Form 1279–3
(June 1984)

BORROWER

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